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ABSTRACTS OF TUBERCULOSIS

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Influence of Tuberculin upon Antibodies.—A series of experiments directed toward the determination of the effect of tuberculin on the formation of antibodies to foreign erythrocytes is reported. The experiments consisted of observing at intervals the anti-sheep erythrocyte titre of the sera of several groups of rabbits which had received intravenously an injection of sheep red blood corpuscles. The prepared rabbits received previous injections of tuberculin, subsequently receiving sheep corpuscles. The control rabbits received the sheep cells only. O. T. made after Koch's original formula, B. E. prepared by Parke, Davis & Company, and O. T prepared in the author's laboratory from cultures from the sputa of several cases of chronic pulmonary tuberculosis were employed. It was found that the highest antibody titre was displayed by the rabbit receiving the largest tuberculin injection, and the next highest by the animal receiving the next largest tuberculin injection, and that the serum of the animal receiving the smallest tuberclin injection displayed a much lower titre, approximatly the same as that given by the "nontuberculin" control animals. From the two groups discussed and from similar results gained in three additional groups, the conclusion is reached that the injection of tuberculin into rabbits, prior to the injection of sheep erythrocytes as antigen, markedly increases the production of specific hemolysin.—*The Influence of Tuberculin upon the Production of Antibodies, H. L. Thompson, Jour. Med. Res., January–March, 1922, xliii, 37.*

Fat Antibodies.—The nonexistence of fat antibodies cannot be considered established because negative results are obtained in guinea pigs,—animals that are just as unlikely to produce fat antibodies as protein antibodies. Besides, the antigen may not always have been prepared in the proper manner. The assertion that the reaction to *N* (Tb. fat) is due to contamination with *A* (protein) is disproved by many facts. In the majority of cases the reaction to *N* is more intense than to *A*, although not the slightest traces of *A* can be chemically demonstrated in *N*. Many cases not reacting at all to *A* react to *N* at a dilution of 0.000001, and by continued treatment with *N* an increased reactivity to the latter antigen is induced which has no effect on the reactivity to *A*. Similar results are obtained in cases with increased reactivity to *A*. The assumption of different protein bodies in *A* and *N*, accounting for the above phenomena, would be against the theory of specificity. The anatomical examination of the wheals produced by *A* and *N*, as well as the precipitin reactions, are in favor of the presence of fat antibodies. Further evidence is seen in the diminished reactivity of *F* following treatment with extracts of thyroid gland, pancreas, suprarenals, brain and ovary, which do affect *A*, even when diluted as highly as the presumed contamination of *N*.—*Fettantikörper, H. Much, Deutsch. med. Wchnschr., February, 24, 1921, xlvii, 211.*

Specificity of Tuberculin Reaction.—The effects of proteins and tuberculins in graduated doses were tested on tuberculous and nontuberculous men and animals. *Caseosan, Aolan*, O. T., B. T. Hochst, and various turtle tuberculins were used intracutaneously or according to Pirquet. The nitrogen content of all the preparations was determined, after which Pirquet's test was made 12 times and the intracutaneous test 371 times on man, while guinea pigs previously infected with 0.01 mgm. human tubercle bacilli were similarly tested. In

30 animals Koch's experiment was done twenty days subsequently. The following conclusions are drawn: 1. The reaction of the tuberculous organism is not dependent upon the nitrogen content of the stimulating agent. 2. The amount of proteins in the tuberculin does not determine the course of the reaction. 3. The body infected with tuberculosis is more sensitive to any biological stimulus than the healthy body. 4. The warmblooded tuberculin is the most stimulating agent for the tuberculous body. 5. The reaction to coldblooded tuberculin does not occur as regularly as to warmblooded tuberculin. 6. The stimulating action of the warmblooded tuberculins is suggestive of specific immunizing substances on account of its regular occurrence.—*Über die Spezifität der Tuberkulinreaktion, E. Sons and F. v. Mikulicz-Radecki, Deutsch. med. Wchnschr., June 30, 1921, xlvii, 735.*

Activity of Old Tuberculin of Various Origins.—Various O. T. preparations were made from bacilli grown on media of dry yeast, peptone, and glycerin. Intracutaneous and subcutaneous tests were then done on tuberculous guinea pigs and the results compared with reactions to standardized tuberculin. The results were: 1. The medium is highly suitable for the cultivation of tubercle bacilli of all types and yields a valuable tuberculin. 2. The figures obtained by the subcutaneous and intracutaneous methods show marked differences, which are probably due to various obscure mechansims of reaction. 3. Tuberculin obtained from Friedmann bacilli produced typical tuberculin reactions in doses 10 to 20 times larger than O. T. 4. Friedmann's and Piorkowski's bacilli, therefore, must be classified among the genuine cold-blooded tubercle bacilli.—*Vergleichende Prufung von Tuberkulinen verschiedener Herkunft, W. Dietrich, Deutsch. med. Wchnschr., April, 14, 1921, xlvii, 406.*

Action of Tuberculin. The effect of unheated O. T. was compared with that of O. T. heated for ten minutes at 100°, 120° and 186°, intracutaneously upon tuberculous patients. No difference was noticed up to 150°; O. T. heated to 186° showed a weakened yet distinct reaction. Tuberculin, reduced to ash, gave no reaction. This resistance of tuberculin to heat speaks against its action being due to a substance of antigenic nature. The action of protein bodies and of tuberculin was then compared. It required 100 times the quantity of dysentery toxin and 200 times the quantity of peptone to produce the intensity of reaction evoked by vital tuberculin. Tuberculin, therefore, produces a specific inflammation, whereas protein bodies produce an unspecific reaction. An attempt was then made to determine whether tuberculin produces its reaction as such or whether it acts only after it has been changed in the body into its waste products. A mixture containing 30 mgm. vital tuberculin and 50 mgm. O. T. per cc., slightly acidified, was treated with 0.5 gram Merck's soluble powdered pepsin, with a small quantity of chloroform added, and incubated for three days at 37°. More pepsin was added every six hours. In like manner trypsin was added to another mixture of slightly alkalinized tuberculin and a small quantity of chloroform added and incubated for three days. These digestion products of tuberculin were then injected intracutaneously in tuberculous patients, who gave weaker and more tardy reactions than those produced by untreated tuberculin. The fourth problem proposed for solution was whether new bodies to which the inflammatory reaction is due are formed in tuberculous tissues by tuberculin. The body fluids and tissues selected for this experiment were red blood cells, serum, ascitic fluid, urine and spleen. Normal and tuberculous guinea pigs were injected intravenously or intraperitoneally with 0.5 to 1.0 cc O. T. A 1.5 per cent solution of sodium citrate was added to the urine and and serum of these animals. The red corpuscles were washed with physiological salt solution and then hemolyzed with distilled water. Serum, urine and ascitic fluid were so diluted with salt solution that 1 cc. contained 1 to 3 mgm. O. T., presuming that the tuberculin was uniformly distributed throughout the body. The tuberculous animals were killed by bleeding after two to four hours. The spleens from these animals were then comminuted and rubbed up with quartz sand in physiological salt solution, in the proportion of 1 part of tissue to 1 of saline. This tissue was placed in a water bath at 55°C. and 0.5 per cent carbolic acid added. The resulting fluid was injected in 0.1 cc. quantity into the left arm of tuberculous patients and 0.1 cc. O.T. in the right arm. It was found that when an animal was injected intravenously with tuberculin the latter was detectable after two hours throughout the entire body and was easily found after eight hours in the serum. The serum of the animal injected with tuberculin after twenty-four hours reacted strongly in some patients and weakly in others; the urine after twenty hours also reacted variably. Tuberculin, consequently, is partly excreted and partly broken down in the body. When tuberculin is injected intraperitoneally into tuberculous guinea pigs very little of it is found in the blood and none in the urine after two hours. In the normal guinea pig the reaction of these fluids after two hours is much stronger.

This slowness of absorption of tuberculin in the tuberculous pigs is ascribed to a possible inflammatory reaction in the peritoneum preventing rapid absorption. The reaction obtained from spleen extract was much weaker than that from the serum and urine, showing that the sessile receptors of tuberculous tissue are not much concerned in this reaction. Agreement is expressed with Selter's theory that tuberculin is or contains a stimulating substance which acts upon the sensitized tissues and produces inflammation in them without itself being changed or bound to the tissues.—*Weitere Untersuchungen über die Wirkung des Tuberkulins, H. Selter and E. Tancré, Zeitschr. f. Tuberk., November, 1921, xxxv, 171.*

Alteration of Biological Properties of Non-Pathogenic Acid-Fast Bacilli.—The pathogenicity of saprophytic acid-fast bacteria and of cold-blooded tubercle bacilli for warm-blooded animals was tested by different methods of infection and in a large series of passages. The biological changes produced by these strains in guinea pigs were given special attention. The experiments were carried out with 8 strains ($S + S_3$ from butter, S_4 Moeller, Tbc. 10 Friedmann, Tbc. 12 Arloing, Tbc. 13 fowl, Tbc. 15 Piorkowski, Tbc. 18 Küster). Guinea pigs received 20–80 mgm. in physiological saline solution, subcutaneously or intraperitoneally. Local nodules almost invariably developed. The bacilli containing tissue was either transmitted from animal to animal or the bacilli were cultivated from the involved areas and reinoculated. For all 8 passage strains an increased virulence was demonstrated. A more intense multiplication of the bacteria and more rapid extension of the pathological changes were visible. The more frequently repeated the passage strains were, the greater was the resemblance of the findings to lesions induced by genuine tubercle bacilli. The primary cultures, characterized by rapid growth, adapted themselves in three or four weeks so much to the warm-blooded organism as to need three to five weeks for their development on artificial media. Besides this, they acquired the morphological characteristics of real tubercle bacillus cultures, grew only at a temperature of 37°–40° and manifested more intense acid-fastness.—*Tuberkulose-Studien. Über die Tierpathogenität der Gruppe der säurefesten Bakterien. Tierpassagen, Virulenzsteigerung und kulturelles Verhalten, W. Kolle, H. Schlossberger and W. Pfannenstiel, Deutsch. med. Wchnschr., April 21, 1921, xlvii, 437.*

Differentiation of Acid-fast Bacteria by Eye Inoculation.—A sharp differentiation of acid-fast bacilli by inoculation into the anterior chamber of the eye in rabbits and guinea pigs was found to be impossible. Acid-fast microörgansims avirulent for man, such as the turtle bacillus and grass bacillus, set up changes in the iris indistinguishable on the basis of clinical course or pathological anatomy from pure tuberculosis, especially in guinea pigs. Inoculation from eye to eye in rabbits gave rise to no appreciable increase in virulence. Tubercle bacilli of the bovine type did not differ from other acid-fast bacilli in their effect on the rabbit's eye. However, they caused generalized disease by extension from the eye, while the other bacteria used did not.—*Zur Differenzierung säurefester Bakterien nach Untersuchungen am Auge, A. Seitz, Zeitschr. f. Immunitätsforsch. u. Therap., December 30, 1921, xxxiii, 431.*

Ammonia Production by Avirulent Human Tubercle Bacilli.—A study of the nitrogenous metabolism, during six weeks, of an avirulent culture of human tubercle, bacilli revealed the fact that there is a continuous production of ammonia in plain dextrose, mannitol and glycerol broths. Over 30 per cent of the nitrogen originally present in the medium may be converted to ammonia. The ammonia produced is partly retained in the medium, but the greater part is lost through volatilization. The loss of ammonia is coincident with an alkaline reaction of the medium. There was no recession in the production of ammonia by the bacilli during the period covered by the experiments. As long as the medium remains acid both the total nitrogen and the ammonia contents of the broth show a decrease. If ammonia is utilized by the tubercle bacilli the amount is extremely small in comparison with the amount lost by volatilization.—*A Study of Ammonia Production by a Certain Strain of Avirulent Human Tubercle Bacillus, A. W. Bosworth, Marion G. Elkins and Marguerite E. Blanchard, Jour. Infect. Dis., April, 1922, xxx, 357.*

Inhibitory Action of Mercury Compounds on Tubercle Bacilli.—The power of phenol to inhibit the growth of human tubercle bacilli is greatly increased by the substitution of a mercury salt in place of one of the hydrogens,—hence a mercury united by one bond to carbon. It is also increased by the substitution of one NO_2 group for one hydrogen in the ring. The position of the NO_2 group has much to do with the degree of increase of the inhibitory power, the ortho position being most favorable and the para position next. This is probably due to a quininoidal change in the phenol nucleus. The

position of the mercury group also has much influence on the degree of increase of inhibitory power, the ortho position seeming most favorable. The mercury bridge compounds seem also to have a high inhibitory power, at least in the two compounds tested, in both of which the bridge occupies the ortho position. Although saligenin or phenol carbinol has the same inhibitory power as phenol, the mercury derivatives of this have a greatly increased efficiency, varying somewhat with the percentage of mercury; one compound, which has less mercury but in which both a nitro and a mercury group occupy the ortho position with respect to the hydroxy group, has a high inhibitory power. In the aniline compounds also the substitution of a mercury group greatly increases the efficiency. The nitro group also increases the inhibitory efficiency, but not in the same order of position as in the nitro-phenols, since the quinoid change does not readily take place in the aniline nucleus. The aniline compounds, having the nitro group in the ortho position and the mercury salt in the para position, seem more efficient than if the order is reversed. Methyl and ethyl groups do not materially effect the antiseptic power of the aniline compounds although these compounds having methyl or ethyl groups plus nitro groups plus mercury groups have a very high antiseptic power, not apparently varying much with either the percentage of mercury or the relative position of the different groups.—*The Inhibitory Action of Certain Organic Mercury Compounds on the Growth of the Human Tubercle Bacillus, L. M. DeWitt, Jour. Infect. Dis., April, 1922, xxx, 363.*

Functional Signs of Adult Pulmonary Tuberculosis.—Pain in the chest in tuberculous subjects may be variable in location and in character. Pain on pressure over the apices of the lungs is frequently and especially significant; in some patients it is more noticeable posteriorly. Pain on pressure of the medial portion of supraspinous fossa, the so called alarm zone, is a sign of considerable diagnostic value in connection with other indications of tuberculosis. Painful points along the distribution of the phrenic nerve are also common, even in the absence of symptoms of mediastinitis and diaphragmatic pleurisy. A painful point may sometimes be found in certain tuberculous subjects with emphysema, due to distention of the lower thorax; this pain is spontaneous or may be elicited by pressure. Anisocoria is a sign of great importance, especially in apical pleuropulmonary lesions; this sign was described in 1873 by Roque. Chauffard and Loederich noted it in connection with pleurisy and Souques with tuberculosis. The inequality may show as a mydriasis on the affected side or later as a myosis in the same side. Mydriasis appears in the early stages of the disease when the dilator nerves of the pupil are stimulated; later myosis ensues because of the inhibition or paralysis of the same nerve supply. There is evidence that this sign may be latent in certain cases. Cantonnet, in 1912, by using cocaine collyria, was able to demonstrate a latent mydriasis in a number of diseases and especially in tuberculosis. Roque, in 1873, got a similar effect by applying belladonna inunctions to the forehead. A capricious, dry cough is common in early tuberculosis, but must be differentiated from a similar cough accompanying Basedow's disease, especially the juvenile type. There is also a more severe cough resembling that of pertussis. This pertussis-like cough (*toux coqueluchoïde*) is a symptom more common in young subjects with enlarged perihilar and mediastinal lymph nodes but is noted also in certain adults; it depends on irritation of mediastinal nerves by enlarged nodes and a reflex stomach irritation through the pneumogastric nerve. When a robust adult complains of such a cough, genuine pertussis must be ruled out. A pertussis-like cough has been noted, since the war, in soldiers who were gassed. Following the gas poisoning these men developed chronic bronchitis followed by sclerosing bronchial dilatation and emphysema. As an accompaniment of the bronchial inflammation there is a reaction in the mediastinal lymph nodes and a more or less diffuse periadenitis. Diagnosis depends on the history, physical signs of bronchial catarrh and emphysema, absence of tubercle bacilli and the radioscopic examination which shows a clouding of the hilar region and an obscuration of the mediastinal space. In tuberculosis the cough may be eructative or even emetic, but this may be also caused by a chronic rhinopharyngitis, or tracheobronchitis. A chronic tracheobronchitis with obstruction of the superior respiratory passages may predispose to tuberculosis. If, in a suspected case, there is no expectoration, the secretions may be provoked by the administration of white oxide of antimony or potassium iodide, but caution must be used so as not to arouse a latent tuberculous focus. In cases where the sputum may be swallowed the feces may be examined for tubercle bacilli. With a history of hemoptysis the physician should always look for tuberculosis. It should be remembered that tuberculous patients may have hematemeses from gastric ulcers. Blood-spitting referable to epistaxis, menstruation, chest wounds and cardiovascular conditions must be differentiated. Dyspnea may be a symptom in early tuberculosis,

when it is usually caused by general intoxication. Sudden appearance of dyspnea is usually due to pleurisy, pneumothorax or phrenic neuralgia. In acute phthisis dyspnea is the rule; it also characterizes certain miliary extensions. A study of the functional value of the respiratory capacity is of value in tuberculosis; also respiratory movements and respiratory gaseous exchange. Diaphragmatic movements should be studied with the fluoroscope. The use of the manometric respiratory mask of Pech promises to be of great advantage. It enables an estimation of the quantity of air that a subject can circulate in his respiratory passages by forced inspiration and expiration and also of the minute volume.—*Les signes fonctionnels de la tuberculose pulmonaire chez l'adulte, E. Sergent, Le Prog. Méd., October 16, 1921, no. 42, 483.*

Significance of Williams's Sign.—As an early sign of recent apical tuberculosis Williams described lagging of the diaphragm on the diseased side. The significance of this sign has been variously interpreted, as due to the entangling of the phrenic nerve in apical pleural adhesions; to a lessened capacity of the lung causing decreased contraction of the diaphragm; to a retraction of the diseased lung so that the diaphragm rises less with inspiration; to loss of elasticity of the pleura due to adhesions; to diaphragmatic pleurisy, and to neuritis of the phrenic nerve. Kaestle rejects completely the phenomenon as an index of *apical* disease, but believes that it is a manifestation of disease of the hilum. With the fluoroscope the diaphragm at the junction of its inner and middle thirds is seen to kink sharply on inspiration. This phenomenon is usually seen on the right side. It is due to tuberculous disease of the tracheobronchial lymph nodes, which are enlarged most on the right side. It is a direct result of the primary tuberculous lesion; primary in Ranke's classification, which designates as primary the initial infection in the lung and the accompanying lymph node involvement. The primary lung lesions have been shown to lie most frequently in the right lung, but if they do occur in the left and drain to the tracheobronchial nodes on that side there is a cross drainage so that it is the nodes on the right which ultimately enlarge. It is due to the enlargement of these nodes and the resultant mediastinitis that the action of the diaphragm is embarrassed, either directly by the action of adhesions or indirectly through the entanglement of the phrenic nerve. In advanced pulmonary tuberculosis with widespread lesions, the tracheobronchial nodes suffer no further enlargement. Thus it may be said that this inspiratory lagging of the diaphragm, together with the presence of enlarged tracheobronchial lymph nodes and the actual primary focus which it may be possible to detect with the X-ray, form a syndrome which is due entirely to the primary lesion.—*Röntgenologischer Beitrag zur Kenntnis der Tuberkulose in der Lungen, Kaestle, Münch. med. Wchnschr., December 16, 1921, lxviii, 1617.*

Plea for More Precision of Tuberculosis Concepts and Terminology.—Toeplitz objects to the lack of precision in the medical literature. In particular he criticizes loose statements as to what individuals are in danger of tuberculosis and states that "if one is infected then he is tuberculous." Further, "that human being is tuberculous who harbors a tubercle in any portion of his body irrespective of whether he is clinically ill." In the classification of the stages of tuberculosis there is much confusion. The classification of Petruschky and Hayek seems most logical. This denotes, as primary, disease of the regional lymph nodes; as secondary, the spread from these nodes by blood, lymph or bronchi; and as tertiary, tuberculosis in vital organs. The term "active tuberculosis" is without clinical significance, for any focus which will give rise to a positive Pirquet reaction is potentially active and it will continue to give rise to this reaction until it is healed. When it is healed its possessor is no longer tuberculous. For immunity in tuberculosis he would substitute "resistance against infection." As regards treatment, he holds that in any case in which tuberculous lesions can be demonstrated specific tuberculin treatment should be inaugurated. This is particularly true with lesions in the traceobronchial lymph nodes which can be detected by X-ray. To neglect such a case will often mean consumption or meningitis.—*Klarheit. (Beiträge zur Tuberkulosefrage.). F. Toeplitz, Münch. med. Wchnschr. December 23, 1921, lxviii, 1651.*

Thoracoscopy.—With an improved and simplified instrument Korbsch has been able to perform repeated thorascopies without danger to the patient. Like Jacobaeus he uses his instrument for both diagnosis and treatment with the galvanocautery. After the induction of pneumothorax the interior of the pleural cavity is plainly visible and the character of the lesions may be observed. In complete pneumothorax one sees the collapsed lung lying against the mediastinum and covered with a smooth and glistening pleura. If adhesions are present they may be in the form of flattened sheets or band-like in structure. Below, the diaphragm is plainly visible, the central tendinous portion white and glistening, and the peripheral

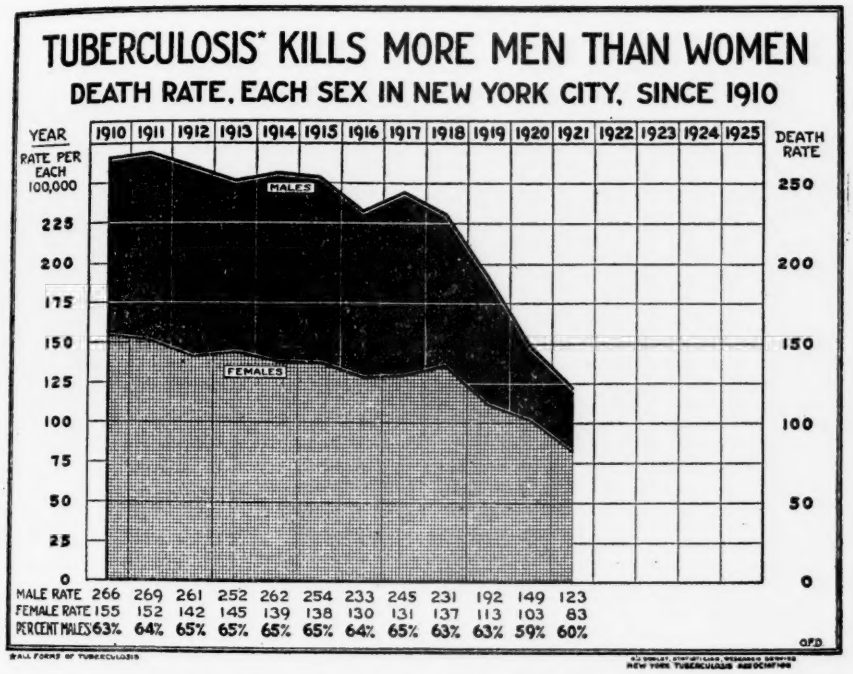
muscular structure brown-red in color. In the phrenicocostal angle is frequently a small amount of fluid. In pleurisies it is usual to find the visceral layer quite normal, while the parietal portion may be covered with shaggy exudate. Miliary tubercles may be detected along the course of vessels and a diagnosis of miliary tuberculosis thus established. While Jacobaeus believes that thoracoscopy offers greater possibilities than laparoscopy, the author is of the opinion that when combined with pneumoperitoneum this procedure may prove as useful in the peritoneum as in the thorax.—*Die Thorakoskopie, R. Korbsch. Münch. med. Wchnschr., December 23, 1921, 1647.*

Tuberculous Antigens in Spinal Fluid.—Twenty-six contributions to the literature on the Wildbolz reaction in the diagnosis of tuberculosis are cited in this article. Seventeen are favorable to the test, 9 unfavorable. Nasso, who used the test in his work on 53 children, found it of distinct value as a means of revealing the presence of active tuberculosis. With Wildbolz's work as a basis, Nasso used a similar intracutaneous test, injecting cerebrospinal fluid condensed to one-tenth, in cases of tuberculous meningitis. In all 6 children with tuberculous meningitis and in one with miliary tuberculosis there was a marked reaction. The auto-urine reaction was also positive. The Pirquet skin test was also positive in only 2 of the 5 children of this group who were tested. The intracutaneous test with 1:1,000 tuberculin was positive in 5. The children's ages ranged from ten months to fourteen years. In the author's opinion, the autocerebrospinal fluid reaction is pathognomonic of tuberculous meningitis. One case with tuberculous adenitis was tested in this way and the result was negative.—*Sulla ricerca degli antigeni tubercolare nel liquido cefalorachidiano, I. Nasso, Pediatria, March 1, 1922, xxx, 193.*

Variations of Complement in Sera of Tuberculous Patients.—Using the anti-sheep hemolytic system titrations were performed that showed (1) that the complements of different sera not infrequently show differences; the complement of a guinea pig is not identical with that of a rabbit or of a man; (2) that differences may also be found between complements derived from different individuals of one species; and (3) that probably the complement of a tuberculous person differs from that of a healthy subject. In the bulk of the titrations 10 per cent tuberculin was used as an antigen. The finding of a plurality of complements coincides with Ehrlich's view. In some cases hemolysis was more complete in the tubes containing complement from tuberculous persons; in others it was more complete with nontuberculous complement. In many cases the findings of tuberculous complements were absolutely parallel. The method employed was not that advised by Moro, but appeared satisfactory for practical purposes.—*Studies on the Effects of Tuberculin (continued and to be continued), P. M. Holst, Tubercle, April, 1922, iii, 289.*

Activity of Tuberculosis Not Determined by Wildbolz Reaction.—Every case of tuberculosis is active when tuberculotoxins are liberated from the foci of disease. The ascertaining of active tuberculosis is easy, provided tuberculous changes can be definitely determined. It is difficult, however, when every symptom fails. In this case a number of methods have been suggested, including the Widbolz autogenous urine test. This method was used to test in (1) definite cases of open or febrile tuberculosis, (2) definite closed cases and (3) tuberculosis suspects who were ill. The results were compared with those obtained in clinically healthy persons. The comparison led to the question whether the autogenous urine reaction was not more of a chemical reaction. The conception was strengthened by an experiment on a seriously ill phthisis case, fourteen days before death, which did not react to tuberculin (1:1,000 and 1:10,000) but reacted to autogenous and normal urine. Also noteworthy was the observation that in 10 cases a urine concentrated, evaporated without vacuum (which would destroy some of the toxins), gave the same reaction as autogenous urine evaporated *in vacuo*. Further, an "artificial urine was prepared (urea 30, oxalic acid 0.02, creatinin 1, hippuric acid 1, sodium chloride 14, sulphuric acid 2, phosphoric acid 3, sodium carbonate 5, calcium carbonate 0.16, potassium carbonate 2.5, magnesium carbonate 0.23, uric acid 0.5, and sterile distilled 1500 cc.) and concentrated to 0.1 volume and gave a reaction identical to the urine reaction. The biological course of the tuberculin and urine reactions was compared. The tuberculin reaction ran a slower course than the urine reaction, which produced a more intense, momentary tissue destruction and terminated more rapidly. The autogenous urine reaction does not seem to be determined by any toxin content of the urine, and therefore a positive reaction cannot indicate active tuberculosis. —*Über die Brauchbarkeit der Wildbolzschen Eigenharnreaktion zur Feststellung der aktiven Tuberkulose, H. Trenkel, Beitr. z. Klin. d. Tuberk., April 11, 1921, xlvii, 219.*

Tuberculosis Mortality in New York City According to Sex.



Bull. New York Tuberc. Assoc., March–April, 1922, iii, No. 2.

Kottmann Reaction in Differential Diagnosis of Thyroid Activity.—The Kottmann reaction is a physicochemical one and is based on the principle that photosensitive substances such as silver iodide or bromide react according to the protective properties of colloids in which they are dispersed. In the ordinary photographic plate, gelatin is the protecting colloid; Kottmann substitutes blood serum of the gelatine. The technique is as follows: To 1 cc. of clear serum are added 0.25 cc. of a 0.5 per cent solution of potassium iodide and 0.3 cc. of a 0.5 per cent solution of silver nitrate. The resulting suspension of silver iodide in the serum is next exposed for five minutes at a distance of 25 cm. to a 500 watt Mazda lamp (or other light of equal intensity). Then 0.5 cc. of a 0.25 per cent solution of hydroquinon is added and the color changes observed at five minute intervals. A dark room is desirable. The serum should be freshly drawn, preferably in the morning before food is taken and should be free from hemoglobin and quite clear. Test tubes should be carefully cleaned and uniform in size (1.5 by 8 cm.) In hyperthyroidism Kottmann found that the original yellowish color of the serum mixture persisted for a considerable time; in normal serums a brown color (silver iodide reduced to free silver) makes its appearance quite promptly; in serums from hypothyroid cases the development of the brown color reaction is accelerated. Bromide medication should be excluded as this retards the reaction. The reaction, in a series of cases tested, yielded a close index of the thyroid activity and few other clinical conditions yielded serums at all comparable with the reactions obtained with exophthalmic serums. The test should be studied in borderline cases including early tuberculosis and neurasthenia.—*The Kottmann Reaction for Thyroid Activity, W. F. Petersen, F. T. H'Doubler, S. A. Levinson and J. E. Laibe, J. Am. M. Ass., April 8, 1922, lxxviii, 1022.*

Tuberculin in Diagnosis of Surgical Tuberculosis.—Thirty cases of joint tuberculosis, including 18 closed forms and 12 with fistulae, were treated subcutaneously with increasing doses of tuberculin. Marked general symptoms followed doses considerably below 10 mgm. Definite focal reactions

were noted in only 4 cases of the closed variety, and 2 pulmonary. In children the value of pain as a sign of a focal reaction is very equivocal. Definitely increased secretion of fistulae was not observed. Negative reactions excluded the diagnosis of tuberculosis in juvenile arthritis deformans, chronic osteomyelitis, and cases of rachitis simulating tuberculous peritonitis. The above method is of no aid in, surgical cases with positive cutaneous and general but negative focal reactions. Following intramuscular administration of 0.5 mgm *Chelonin* in a child with lymphoma colli and impaired resonance over the right lower lobe, a distinct reaction with small bubbling râles over the above area, increase of temperature and cough were observed. *Chelonin* never caused injury to 24 patients, although marked general symptoms were frequent. Intramuscular injections were better borne than subcutaneous. Friedmann's remedy was given to 12 cases with benefit in none. Studies on the relation between the intensity of the cutaneous Pirquet reaction to symptoms and signs led to the following conclusions: 1. Cases of surgical tuberculosis generally give more intense reactions than the visceral varieties. The most intense reactions occur in bone tuberculosis with fistulae and lymph node tuberculosis of the neck with or without fistulae, especially when associated with other signs of scrofulosis. Subcutaneous injections several months later resulted in flaring up previous areas of reaction. 2. Reactions induced close to the focus were found to be more intense than those distal to the involved area in 4 of 10 cases of unilateral metatarsal and joint tuberculosis. 3. Blondes seem to react more intensely than brunettes. Skin pigmented by sunlight showed diminished reactivity in 4 children, even some time after the exposure. Similar results were obtained in 4 other children exposed to the Alpine sun lamp to the point of erythema. 4. Of 6 children with severe bone and visceral tuberculosis the Pirquet reaction was negative or mildly positive in 4 on the eighth day after the onset of measles. In the other 2 the reaction was positive several days later; and three weeks later all children again presented an intensely positive test. The measles had no unfavorable influence on the course of the tuberculous process. In several cases of pertussis there was no change in reactivity, 5. An intense cutaneous reaction is not an unfavorable sign. A decrease of reactivity with progressive improvement could not be noted, while a positive anergy developed after specific tuberculin treatment. In 2 cases of long-standing tuberculous bone suppuration, with general prostration and slight tendency to healing, the completely negative cutaneous reactions were converted into distinctly positive ones by *M TbR* treatment. A postive reaction following a primary negative one is found only in clinically nondemonstrable tuberculosis.—*Diagnostische kutane und subcutane Tuberkulinreaktion bei sogenannter chirurgischer Tuberkulose, E. Rüscher, Deutsch. med. Wchnschr., May 12, 1921, xlvii, 529.*

Serum Globulin in Tuberculosis.—Naegeli and Rohrer determined that the globulin content of the serum showed deviations from the normal in a number of diseases. In the diagnosis of pulmonary tuberculosis it was found to be of no value, especially in the exudative and productive forms of tuberculosis. In the progressive cases there was a tendency in the majority of cases to an increase of serum globulin, this being a bad prognostic sign. A diminution seemed to be of favorable prognostic value.—*Viskometrische und Refraktometrische Serumuntersuchungen und ihre Bedeutung für die Diagnose und Prognose der Lungentuberkulose, E. Peters, Zeitschr. f. Tuberk., November, 1921, xxxv, 196.*

Diagnostic Value of Moro Tuberculin.—Cozzolino tested 68 children with Moro's new tuberculin preparation. The children's ages ranged from three months to eleven years. The various forms of tuberculosis from which they suffered were as follows:

	cases
Tracheobronical lymphadenopathy	44
Scrofula	2
Tuberculous meningitis	5
Tuberculous peritonitis	2
Pulmonary tuberculosis	3
Pleurisy with effusion	1
Tuberculosis in nursing infants	3
Various forms of surgical tuberculosis	8
	8

Of these 68 cases, only 11 gave negative reactions. All cases reacting negatively were retested. For piercing the epidermis a small scalpel was used in preference to the Pirquet borer. Moro has incorporated his new preparation in an ointment for use in the "inunction test." Tests were also made with tuberculin from the Serotherapeutic Institute of Berna (*TB*), and with that of the Milanese Serotherapeutic Institute (*TISM*), as well as with that of E. Moro (*TM*). Moro's preparation much more nearly fulfilled the requirements of a reliable biological test. It was of greatest value in the diagnosis of latent tuberculosis, especially in infants. As Prausnitz believes, the greater sensitiveness of *TM* is due to the fact that it contains

bovine tuberculin, thus permitting no case in which the bovine tubercle bacillus is a factor to pass unrecognized.—*Contributo a valore diagnostico della nuova tubercolina di E. Moro, O. Cozzolino, Pediatria, January 15, 1922, xxx, 49.*

Tuberculosis of Thyroid Gland.—It was thought that the rarity of thyroid gland infection might be due to an inhibitory action of secretion, especially of the colloid of the gland. With this in mind the colloid was pressed out, and graded quantities of tubercle bacilli mixed with the colloid and exposed for from four to twenty-four hours in the incubator, and then injected into guinea pigs. The injected animals, however, showed no longer duration of life than the control animals.—*Kropfbefunde als Beitrag zur Kenntnis der Tuberkelbazillen-Septikämie, K. Nather, Zeitschr. f. Tuberk., June, 1921, xxxiv, 390.*

Tuberculous Empyema.—Primary idiopathic pleurisy with effusion, in a large proportion of cases, is probably tuberculous in nature. A past history of pleurisy with effusion is common in cases of tuberculous empyema. In many cases the effusion is serous at the onset. Tuberculous pleurisy may be primary, or it may be secondary to a pulmonary, peritoneal or other tuberculous lesion. The onset of a tuberculous effusion may be insidious, or it may be sudden and associated with an acute and severe constitutional reaction. A mixed pleural infection due to the perforation of tuberculous cavitation often runs an acute and rapidly fatal course. Diagnosis of tuberculous empyema is made by the demonstration of bacilli in the exudate, by animal inoculation or by examination of the sectioned pleura. A sterile effusion is probably tuberculous. An infected effusion may be tuberculous. Empyema following primary idiopathic pleurisy with effusion or empyema of insidious onset, especially in the presence of a pulmonary or other tuberculous condition, is probably tuberculous in spite of persistently negative findings over a long period. In a closed pleural cavity a sterile effusion, whether serous or purulent, should not be treated by open drainage, except in the presence of an impending perforation of the chest wall. Repeated aspiration of only part of the fluid is indicated in those cases of serous effusion with definite dyspnea on exertion or symptoms of circulatory embarrassment. The replacing of aspirated fluid by nitrogen or filtered air may be indicated in cases in which there are symptoms of active phthisis referable to the same side as the effusion. A sterile purulent effusion should be treated as though it were serous if the lung expands when fluid is withdrawn. If the lung is fixed and collapsed or if the effusion persistently recurs, an extrapleural plastic operation is indicated. Effusion in a closed cavity showing a mixed infection should be treated by the closed method with antiseptic solutions, irrigation, or by open drainage; the open drainage is indicated especially in cases of severe infection associated with extensive pulmonary tuberculosis, making irrigation hazardous. Tuberculous empyema with a large bronchial fistula should be drained by the open method. A large tuberculous empyema with mixed infection from previous drainage, operation or spontaneous perforation of the chest wall, requires a plastic operation, preferably after treatment with Dakin's solution. A plastic operation involving closure of a bronchus offers the only prospect of cure in case of an associated large bronchial fistula. Dakin's solution irrigation may be contraindicated in the presence of extensive disease of the lung, owing to its corroding action on any superficial lesion and possible resulting in hemorrhage or the formation of a bronchial fistula. A plastic operation is usually eventually required in the case of closed cavities when the empyema is of long standing, and of all large, open, secondary, infected cavities. An extrapleural rib resection is indicated for collapse of closed sterile cavities. The Boiffin-Wilms operation is especially suitable for the collapse of large cavities without excessive thickening of the parietal pleura or rib deformity. A skin or skin muscle thoracoplasty is indicated for the obliteration of relatively small cavities. Cases of long standing associated with greatly thickened pleura require an extensive resection of the entire chest wall by Schede's method. Operation in several stages is especially indicated in the treatment of tuberculous empyema, and, if practical, it should be preceded by antiseptic solution irrigation. Such treatment should extend the indications for operation and should lower the postoperative mortality.—*The Diagnosis and Treatment of Tuberculous Empyema, C. A. Hedblom, Surg. Gyn. & Obstet., April, 1922, xxxiv, 445.*

Pleural Tuberculosis without Pulmonary Tuberculosis.—Cases of pleural without pulmonary involvement are few. Such a case of primary tuberculosis of the pleura is reported, no macroscopic or microscopic tuberculosis lesions being found. The pleura was caseous and there was col-

lapse of the entire lung. The bronchial lymph nodes showed no tuberculosis at autopsy, but the substernal glands were caseous. The pleuritis evidently developed from a massive involvement of the spleen and liver.—*Beitrag zur Pathologie der Pleuratuberkulose, H. Landgraf, Zeitschr. f. Tuberk., August, 1921, xxxv, 29.*

Tuberculosis of the Heart in Children.—Following a review of the literature on this subject, the writer presents a case of his own, a boy of twenty months. The patient was pale, poorly nourished, markedly rachitic, with development in every way retarded, and marked general lymphadenopathy. The mother had died of pulmonary tuberculosis. The baby had right purulent otitis lasting nine months and enteritis lasting six weeks. At one time there were signs of capillary bronchitis, and later crepitant and sonorous râles at the right apex. He improved markedly, and gained rapidly in weight following the administration of glycerophosphate of lime. About ten months after the first examination, the lymph nodes increased in size, the abdomen became distended, and a mass originally felt in the ileocecal region could no longer be made out. The patient ran a protracted febrile course, the temperature in the evening being about 38.8°C. For about a week before death, which occurred very suddenly and unexpectedly (one year after the first observation) the evening temperature was as high as 39°C. Autopsy revealed marked rickets, white infarct in the left lung, purulent exudate in the bronchi, small cavity at the right apex filled with caseous material and hypertrophy of the tracheobronchial lymph nodes with caseation in some of them. Physical examination of the heart had been repeatedly negative. At autopsy ,an aneurysm as large as a walnut was found at the apex, and near its centre was a small opening. The heart muscle was pale and flabby. Near the apex was a small tubercle, the size of a large pea, filled with caseous material and undergoing calcification. Tubercles were found only on the endocardium of the left heart. The author believes this to be the only reported case of rupture of the heart, due to tuberculosis, in a child. In his opinion the heart became involved by contiguity, through the pericardium.—*La tuberculose du coeur chez les enfants, B. Korybut-Daszkiewicz, Arch. d. Méd. d. Enf., March, 1922, xxv, 150.*

Abdominal Tuberculosis.—The general indications for operation in the various types of abdominal tuberculosis are: Pain, when it occurs in recurrent, well defined colicky attacks, especially if these return with regular periodicity and sharp intensity, when the pain signifies a mechanical interference with intestinal peristalsis. Lymph node masses in the mesentery, if not too extensive and if they do not yield rapidly to constitutional treatment, should be excised, and this is particularly urgent when they are associated with colicky attacks of pain. Palpable masses in the ileocaecal region, associated with signs of chronic intestinal obstruction, are an emphatic indication for laparotomy and resection of the tuberculous ileocaecal region should such be found. The ascitic form of tuberculous peritonitis is essentially a disease for surgical treatment. The operation is free from danger and its beneficial results are usually dramatic. In the plastic type of tuberculous peritonitis, if the trouble does not yield to the ordinary medical measures, operation may be undertaken with a fair degree of safety, provided that no extensive attempt is made to separate adhesions, and there is some ground for hoping that even these apparently desperate cases may make a complete recovery.—*A Post-Graduate Lecture on Clinical Aspects of Abdominal Tuberculosis, J. Morley, Brit. M. Jour., March 11, 1922, no. 3193, 383.*

Hutinel's Cardiohepatic Cirrhosis with Enormous Tuberculoma of Right Auricle.—The patient was a ten-year-old girl. Her father had died of tuberculosis, but she had never been exposed to him as he had deserted the mother before the birth of the child. Her history was negative except that she had pertussis at the age of four. Four months before her admission to the hospital she had an attack of "grippe" followed by bronchopneumonia. There was no history of rheumatism. For a number of weeks before her admission she suffered from increasing edema, dyspnea and oliguria, being temporatily improved by rest, digitalis and purgatives. Just before admission she had generalized convulsions followed by unconsciousness. Examination showed an unconscious girl with marked general edema, no dyspnea, distended abdomen without definite ascites, very large liver, heart of normal size and "fixed" (not changing with change of position of the body), sounds distant, persistent tachycardia with embryocardiac rythm, and no murmurs. The blood Wassermann was negative, the skin tuberculin test positive. Five days later she was fully conscious, less edematous, and there was still no paralysis. The following day (six days after admission) she became comatose, cyanotic, had right-sided hemiplegia, and died twenty-four hours later. Autopsy revealed an area of softening of brain tissue, 3 cm. in

diameter, in the anterior part of the left frontal lobe, due to recent cerebral embolism, considered to be the immediate cause of death; adhesive fibrinous pleurisy; chronic passive congestion of lungs and liver; and completely adherent fibrinous pericarditis. In the right auricle was a firm mass, about 4 cm. in diameter, attached to the auricular wall, containing in its centre a yellowish necrotic liquid. Microscopic examination revealed many tubercles at the site of implantation in the auricular wall. The mass was unquestionably a tuberculoma. Tuberculous involvement of the tracheobronchial lymph nodes was present. The ductus Botali was patent, and this was considered responsible for the "paradoxical localization" of the embolism in the left frontal and temporal lobes.—*Un cas de cirrhose cardio-hépatique d' Hutinel avec un enorme tuberculome de l'oreillette droite, M. E. Lasnier and A. Armand-Ugon, Arch. d. Méd. d. Enf., January, 1922, xxv, 25.*

Relation of Tuberculosis of Sphenoid to Hypophysis.—A retrobulbar injury to the optic nerve due to tuberculosis of the sphenoid bone rarely occurs. The symptoms of a case observed in a man of twenty were headache in the eye sockets and upper and lower jaws, almost complete amaurosis in one eye, great diminution of visual acuity of the other, and a constriction of the visual fields. The diagnoses were retrobulbar compression of the optic nerve and empyema of the sphenoid sinuses. Upon evacuation of the sinuses the pain ceased, followed by progressive decline and death within a few days. Autopsy revealed a tumor-like lesion originating in the sphenoid bone and microscopically showing giant cells and tubercles. Seven cases of tuberculosis of the sphenoid bone are analyzed: 6 occurred during the first three decades of life, 5 in males and 2 in females. In all cases foci of tuberculosis were present in other parts of the body. Three patients showed a necrotic type, and 4 a granulating type of tuberculosis. The growths were tumor-like and showed a tendency to perforation. Clinically, only the eye symptoms appeared with any degree of regularity, with a more or less sudden onset of amaurosis. In 3 cases the hypophysis was also involved with no manifest characteristic symptoms.—*Die Tuberkulose des Keilbeins und ihre Beziehungen zur Hypophyse, H. Kurzak, Zeitschr. f. Tuberk., July, 1921, xxxiv, 433.*

Dorsal Pott's Disease with Large Mediastinal Abscess.—A girl of nineteen months was admitted to the hospital as an emergency case, markedly asphyxiated. She died in an hour and a quarter. Fluoroscopy was done to determine the presence or absence of a foreign body. Marked enlargement of the mediastinal shadow was found. Autopsy revealed caries of the fifth dorsal vertebra (the onset of kyphosis had not been noticed by the parents) resulting in chronic mediastinitis, with walled off abscess as large as a small orange, containing grumous material under pressure. The authors could not explain the suddenness of the onset of symptoms leading so rapidly to fatal termination.—*Mal de Pott dorsal avec volumineux abcès médiastinal, H. Barbier and Arbeit, Arch. d. Mèd. d. Enf., March, 1922, xxv, 163.*

Treatment of Tuberculosis of Ankle.—Tuberculosis of the ankle is said to occupy third place in order of frequency of involvement of joints of the lower extremity. The bones bearing most weight are especially disposed to invasion. The astragalus is most frequently involved and together with the tibia and os calcis is more often affected than the smaller tarsal bones. The idea seems to be gaining ground that the synovial membranes, rather than the bone, are the more often the seat of primary involvement. In the synovial type the disease spreads more rapidly over the surface of the bone; in osseous lesions it extends beneath the cartilage. In astragalotibial disease swelling is usually first noticed on the front of the ankle, on either side and along the extensor tendons, because the capsule is thinnest at this point. Fluctuation is most easily elicited during tarsal flexion of the joint. Later effusion appears also below the malleoli. Extension of the disease to the os calcis and scaphoid is frequent. In walking there is a tendency to equinovalgus with rotation outward of the leg and foot. In the later stages infiltration of the tissues and elevation of temperature are the rule. In subastragalar disease the swelling is usually noted lower down. The prognosis in children is very favorable and more so with conservative treatment than with operation. In childhood conservative treatment should be carried out rigidly and consistently, paying attention to usual hygienic measures, including heliotherapy, as well as to local fixation. Occasionally minor operations may be justifiable, but radical operations will rarely be called for. In adults, other than laborers, with definite tuberculous involvement of ankle joint and component bones, conservative treatment is fully justified and may be indicated for six months. If there is no decided improvement with partial or entire disappearance

of the swelling, pain, and infiltration of soft parts, much time will be gained by radical operative measures. A plan for conservative treatment includes, in acute cases, rest in bed for two weeks, with elevation of the foot, elastic compression bandage over lamb's wool, followed by plaster cast from just below the knee to toes. Beginning deformity may be corrected by gentle molding of the foot and retention in the corrected position by a succession of casts. Weight bearing should be avoided by use of crutches and elevation of opposite shoe. Later a Thomas splint may be substituted. If in six months there is decided improvement a double bar splint extending from below the knee into the shoe with melted leather ankle support and foot plate can be substituted. General constitutional measures, exercises not involving the joint and heliotherapy are presupposed. Regarding operation, of the 30 different approaches to the ankle joint referred to by Koenig, the Kocher method appears to be the most generally applicable and the technique is described. In dealing with tuberculosis of the smaller tarsal bones the principle of arthrodesis is recommended for a considerable proportion of cases. All curetting operations should be condemned because one cannot see what is being done. After-treatment should be conducted just as in nonoperative cases. If the disease is extensive and not likely to be controlled by these methods, amputation should be performed. The prognosis of tuberculosis of the ankle in the adult with conservative treatment is poor. The duration of conservative treatment in cases terminating favorably is, according to statistics, four years. Amputation is far too frequent because conservative measures are persisted in for too long a period and, in cases followed over a ten year period, statistics show that nearly 50 per cent died of other forms of tuberculosis. In further reports, separation of cases into adult and childhood groups is urged.—*Treatment of Tuberculosis of the Ankle in the Adult, J. Calvé, J. Bone and Joint Surg., January, 1922, iv, old series, xx, 33.*

Tuberculous Bursitis.—Fungous bursitis consists of a circumscribed tumor, less of a fluctuating than of a doughy consistence, but slightly painful and producing but little inconvenience. This condition usually arises from chronic irritation of the bursa in persons of *habitus phthisicus*, though no active pulmonary lesion be demonstrable, or in those in whom a familial tuberculosis is found. Upon palpation one can feel a cushiony tumor when only the bursa is diseased. If the joint is also affected the area about it is sensitive or painful. Tuberculous bursitis does not impede motion of a joint. The treatment *par excellence* is removal of the diseased bursa. If the process has extended to the soft parts or to the bony structures, diseased areas must be thoroughly curetted. A list of the numerous bursae and their location is given.—*Die primäre tuberkulöse Schleimbeutelentzündung, J. Rosner, Wien. med. Wchnschr., November, 19, 1921, lxxi 2008, and December 3, 1921, lxxi, 2110.*

Lymphocystic Urethral Lesions.—Lymphocystic lesions in the posterior urethra bear a definite relation to systemic tuberculosis and persist or recur as long as the coexisting tuberculous focus remains active in spite of all local treatment to the urethra, including destruction of the cysts. In the entire absence of local treatment of the urethra, they disappear spontaneously after a more or less prolonged course of antituberculous treatment, providing the patient's general health responds. Pelouze reports 75 cases and comes to the following conclusions: Of 16 cases presenting these cysts at autopsy all but 2 showed massive active tuberculosis. One of these had been treated for tuberculosis and showed healed tubercles of the spleen and the other showed old apical lesions. Seventy-five living patients, or 83.3 per cent of those in whom careful clinical studies were possible, gave strong evidences of an active tuberculous lesion. In these 75 cases the lesions were located, in order of frequency, in the lungs, kidney, bladder, epididymis, prostate, seminal vesicles, peritoneum and bone. Tubercle bacilli were found in the urine in 32 per cent of the cases. Of the 16 autopsy cases the principal lesions, exclusive of terminal miliary foci, were distributed in the lungs, intestines, spleen, pleura, kidneys, bladder, liver, pericardium and fallopian tubes. The urethral lesions are important from a diagnostic standpoint alone, as they never ulcerate nor extend to the prostate. They remain as long as the causal focus is active, and spontaneously disappear, providing the patient's general health improves. They occur in women, but are easily confused with the mucosal tabs common at the female vesical neck. Burning in some portion of the urethra during micturition is the most common subjective symptom. The other symptoms are usually those of a coexisting prostatitis or tuberculous focus. Many patients have symptoms of prostatitis only and are suspected because treatment fails to improve or makes worse the

prostatic condition. Approximately 50 per cent of the patients, complaining of burning on urination, in the absence of acute inflammation and irritating treatment, and 70 per cent of the cases of proved chronic follicular prostatitis that do not improve or grow worse on massage will show the lesions and have tuberculosis. The lesions are only occasionally true tuberculosis but are apparently due to the action of some tuberculotoxin. They are never primary urogenital tuberculosis. Prostatic massage should be avoided while the lesions are present and attention be directed toward rendering latent the causal focus elsewhere in the system. The burning on urination can usually be relieved by oral administration of some form of creosote.—*Lymphocystic Urethral Lesions: an Evidence of Systemic Tuberculosis, P. S. Pelouze, Jour. Urol., March, 1922, vii, 165.*

Tubercle Bacilluria of Long Duration.—Caution must be exercised in the removal of a kidney that is excreting tubercle bacilli, because in both of the cases studied the patients' urine contained the germs for a long time (for fourteen years in one case), and upon removal of the affected kidney the lesion found was only of small size with an adequate amount of functional kidney tissue remaining. In one of the cases the kidney showed a healed tuberculous area and the bacilli excreted in the urine emanated from a secondarily infected tuberculous prostate.—*Durch 14 Jahre beobachtete Tuberkelbazillurie ohne sicher nachweisbare Organerkrankung, F. Necker, Wien. med. Wochnschr., October 15, 1921, lxxi, 1803.*

Herpes Zoster Following Tuberculous Pleurisy with Effusion.—A girl of fourteen, previously reported, had marked left-sided pleurisy with effusion, and left intercostal herpes occurring six months after onset of symptoms. The herpes was a late manifestation, occurring after the disappearance of the effusion and due possibly to the formation of dense pleural adhesions involving the intercostal nerves. Since the herpes was on the same side as the pleurisy, such an explanation of the condition seemed plausible. The question arose of whether a "true zoster" might not occur as a manifestation of the generalized tuberculous infection. The second case, forming the subject matter of this report seemed to add weight to the latter hypothesis, for under conditions analogous to those found in the first case, the herpes appeared, six months after onset, on the side opposite to that containing the pleural effusion. In spite of the appearance of the herpes in the second patient (a boy of 15), he continued to gain rapidly in weight. The author calls attention to the fact that in some patients herpes is a forerunner of "bacillosis." It may thus appear before the pleurisy.—*Zona intercostal croisé consecutif à un pleurésie tuberculeuse avec épanchement, G. Schreiber, Bull. d. l. Soc. d. Pediatrie de Paris, January, 1922, xx, 31.*

Tuberculosis Cutis Verrucosa Cured by Diathermy after Failure of Friedmann Vaccine.—The author contracted tuberculosis of the hand at an autopsy and was treated with Friedmann's vaccine. No reaction or tendency to healing was seen during the following ten months. At the end of this time a second injection was followed by a distinct local reaction with increased redness, swelling, and pain. After the reactions subsided the disease progressed. The hand was then exposed three times to X-rays, and after this the tuberculous tissue was removed by diathermy, whereupon complete recovery occurred in five months.—*Heilung einer mit dem Friedmann' schen Mittel erfolglos behandelten Tuberkulosis cutis verrucosa durch Diathermie, G. Poelchau, Deutsch. med. Wchnschr., May 12, 1921, xlvii, 534.*

Scrofuloderma and Immune Bodies in Tuberculosis.—Scrofuloderma means any tuberculous process in or beneath the skin which ultimately comes to the surface as a single or multiple nodule. The nodules are analogous to cold abscesses in that they are unaccompanied by any local manifestation of inflammation. The central portion of these nodules tend, from the beginning to liquefy. Microscopically, this fluid is seen to be composed of serum and leucocytes with large numbers of tubercle bacilli. The lesions are unattended by constitutional symptoms, and usually heal spontaneously. Three cases of this disease are reported. After repeated aspirations and general heliotherapy the lesions disappeared, leaving only a very small amount of scar tissue. Exotoxins liberated by the tubercle bacillus combine with the collagen of young connective tissue and this product nourishes the bacilli. When such a combination no longer takes place the bacilli die. The products formed by the reaction between tubercle bacillus and host diffuse through the wall of the tubercle and are absorbed by the surrounding cells; in greatest quantity in its immediate proximity and in progressively smaller amounts away from it. This absorbed substance confers an absolute immunity immediately about the tubercle, but the immunity rapidly

becomes less a short distance away. The disease process is terminated by the inability of the bacilli to gain nourishment from immunized tissues. They die, and then set up reactions due to their liberated endotoxins. Such reactions are inflammatory in character, but usually of short duration. In tuberculin reactions we observe a combination of the action of endo and exotoxins, the immediate but transitory inflammatory manifestations being due to the former while the papule which may persist is due to the exotoxin.—*Die Selbstheilung des Skrofuloderma und tuberkulöse Immunstoffe, A. Jesionek, Münch. med. Wchnschr., November 25, 1921, lxviii, 1509.*

Routine Treatment of Tuberculosis.—At Davos the treatment consists of the use of proper diet, air and light, rest, graded exercise with proper supervision and instruction. Milk and fats are especially important in the diet, the former serving to flush out toxins. Overfeeding is harmful. Alcohol is administered only to patients with high fever. Besides direct sunlight, diffuse daylight is used in treatment. Rest is graded according to the severity of the case, complete rest being given to those with fever. Judgment of the proper transition from complete rest to exercise taxes the skill of the physician. The psychic treatment of the patient is as important as the somatic, and the more individual that patients in institutions are treated the better are the results obtained.—*Allgemeine Behandlung der Tuberkulose, K. Turban, Zeitschr. f. Tuberk., October, 1921, xxxiv, 635.*

Results of Sanatorium Treatment of Tuberculosis.—A group of 1,364 clinically proved cases of tuberculosis were checked up from two to six years following discharge from the sanatorium. The patients belonged to the industrial class almost entirely. The total mortality in this period was 34.2 per cent, but 24.6 per cent of all cases were in an advanced stage on admission. Of the early cases 8.5 per cent were dead. The percentage at work was 48.6. The chance of a stage I (Turban-Gerhardt) case living for more than two years is four times greater than that of a stage II case and nearly nine times greater than that of a stage III case. Three-fourths of the stage I cases were able to work as compared with one-sixth of stage III cases. The influence of treatment is probably greatest with stage II cases. Of 1,321 pulmonary cases, 645 had tubercle bacilli in the sputum; in 676 bacilli could not be found. Among cases coming under treatment after tubercle bacilli appear in the sputum the death rate is five times greater than where treatment is started before bacilli appear. The highest mortality occurs in the first two years; if a patient survives for five years he has a considerable chance of continuing to live. The years 1918 and 1919 were characterized not only by a high percentage of advanced cases but also by a high subsequent mortality, probably due to undernutrition and the influenza epidemic. Tuberculous complications increase the mortality; laryngeal tuberculosis doubles it. Nontuberculous complications which do not preclude admission to a sanatorium do not influence the course of the disease. To properly assess the value of sanatorium treatment groups of treated cases must be compared with untreated cases. Even this would not take into account the educational and preventive features.—*An Analysis of the Present Condition of 1,364 Cases of Tuberculosis Two to Six Years After Sanatorium Treatment, W. C. Fowler, Tubercle, April, 1922,* iii, 305.

End Results of Sanatorium Treatment.—Between 1903 and 1919, sanatorium treatment was given 3,220 patients at the Kelling sanatorium. Of this number 460 were lost sight of, leaving 2,760 patients. In 1921, 1,125 or 40.7 per cent were living. According to the patients' classification on admission, 1118 patients or 64.7 per cent in class I were living, as were 801 patients in class II and 841 patients or 15 per cent of class III. Of those that died, 6 per cent died within one year, 57.6 per cent within one to five years, 9.2 per cent within ten to fifteen years, and 2.9 per cent within fifteen to twenty years. Of all the patients who died after receiving sanatorium treatment, the average length of time between the appearance of the first definite symptoms and death was just over five years.—*The End Results of Sanatorium Treatment of Tuberculosis; Record of Seventeen Years' Sanatorium Work, F. W. Burton-Fanning and W. J. Fanning, Lancet, February 25, 1922, no, 3191, p. 306.*

A Treatment for Early and Moderately Advanced Tuberculosis.—A so called "T-B" tablet of the following composition is used: red oxide of mercury, 1/250 gr.; manganese iodide, 1/8 gr.; sodium cinnamate, 1/12 gr.; copper phosphate, 1/24 gr.; sodium formate 1 gr.; arsenous acid, 1/60. gr.; strychnine hypophosphite, 1/128 gr.; iodized calcium 1 gr.; oil of cinnamon, 1/20 min.; charcoal, 1 gr. One tablet is to be taken half an hour after each meal for fifteen days at a time; then a rest for five days followed by

another fifteen days of treatment; and so on alternately. This plan obviates danger of arsenical poisoning and the treatment may be continued for from two to twelve months. "T-B tablets are indicated in all forms of tuberculosis and also in cancer and other blood diseases." These tablets revive cell life, promote rapid corpuscle building, accelerate retarded metabolism and increase phagocytosis. In addition, a tablet of the following composition is given three times daily: iodized lime, grs. 2; creosote, min. 4; guaiacol carbonate, min. 2. At the same time two grains of quinine are given. As soon as the stomach can bear it, increase the last named tablets to 2 or 3 at a dose and the quinine to 6 to 10 grains a day in divided doses. Calcium chloride is used for profuse or frequent hemoptyses, and for the cough a capsule or tablet of codeine phosphate, gr. 1/3, terpin hydrate, grs. 2, phenacetine, grs. 2, every three hours or when needed. For soreness, pain, pleurisy, tightness and dyspnea, libradol is applied externally. One hour before and two hours after sunrise out of doors in summer time are worth more to consumptives than the balance of the day. Raw eggs are not given. "If milk is relished and agrees with the patient, take from one to three quarts from a nursing bottle such as used for infants and suckling babes. It is thus quickly assimilated and builds up the entire body rapidly." The fumes of slaking lime are inhaled night and morning. Catarrhal and nonvirulent tubercle vaccines are used in conjunction with the drug treatment.—*A Successful Treatment of Pulmonary Tuberculosis in the First and Second Stages, J. Z. Taylor, Med. Rec., April 15, 1922, ci, 622.*

Pneumolysis and Paraffin Filling of Thorax.—*Preparation of the filling material*: Paraffin with a melting point of 50–52°C. is used. After melting it, 0.5 to 1.0 per cent *vioform* and 0.5 to 1.0 per cent bismuth subcarbonate are added. The *vioform* acts bactericidally, while the bismuth aids in the raying to determine the success of the filling. The fluid mixture is filtered through wide-meshed gauze, kept in sterile cans and autoclaved. Previous to operation the required amount of material is kept in a paraffin oven at 46–47°C. At this temperature the paraffin is readily removed from the cans and can be kneaded. *Technique of the operation:* Previous to operation the patient is urged to clear the chest of sputum. Morphine (0.01 gm.) is injected 1½ hours before. The operation is performed under local novocain-adrenalin anaesthesia. Usually 0.3 to 0.4 gm. are used for the entire operation. Scopolamine is administered with the morphine. To anesthetize the intercostal nerves a 1 per cent solution, and for the muscles and skin a half per cent solution of novocain is used. The incision is made near the insertion of the pectoralis major and after blunt separation of its fibres a portion of the 2nd rib is resected subperiosteally. It has proved best not to resect this rib entirely, but merely to sever its connection at the chondrosternal junction, in order to enable its being replaced later. The difficult part of the operation lies in the freeing of the lung from its adhesions which is accomplished by means of the first finger and can be carried out from the apex to the 4th or 5th ribs. Below that level the lung is usually not so firmly adherent. The bleeding points are cared for and the blood in the pleural cavity is aspirated out. The paraffin is now introduced into the pleural cavity in small pieces, until about 600 to 1000 cc. of it have been put in. A larger piece is now pressed into and over the opening into the cavity and the rib is replaced. The skin is sutured in the usual manner. Soon after the operation the patient generally expectorates tinged or bloody sputum. The approach to the pleural cavity from the rear of the chest is by the Sauerbruch operation. The advantage of the posterior operation is that the apex can more easily be freed from its adhesions. There may be exudation of a clear yellowish fluid containing fibrin and 5 per cent albumin and a predominant number of polynuclear leucocytes. Bulging or fluctuation are indications for thoracocentesis and evacuation of fluid. *Indications:* In circumscribed lesions of one apex, especially when there are adhesions of the apex and but little expectoration, paraffin filling is preferable to pneumothorax, in that the function of the lower noninvolved portion of the lung in the former treatment is not interfered with. In unilateral lesions, however, when the entire lung is involved, total thoracoplasty is preferable to paraffin filling. After total thoracoplasty with persisting cavitation paraffin filling can remedy the defect. In cases of persistent hemorrhage paraffin filling is often of value when pneumothorax does not succeed.—*Beitrag zur chirurgischen Behandlung der vorwiegend einseitigen, kavernösen Lungentuberkulose mit Pneumolöse und Paraffinplombierung nach Baer, H. Stöcklin, Zeitschr. f. Tuberk. December, 1921, xxxv, 241.*

Extrapleural Tamponing.—Baer's method in brief consists of an anterior incision 6 or 7 cm. in length parallel to the

second rib which is separated from its sternal attachment and shoved to one side. The parietal pleura is then stripped from the chest wall with the finger tips, care being taken to free it anteriorly as far as the sternum. In some cases special instruments (one, a modification of Doyen's hook) are used to free the pleura. The lung is compressed by introducing a sufficient quantity of paraffin, melting point 48° to 50°. In some cases 1000 cc. have been used. The operation is done under local anesthesia after a preliminary administration of 0.01 gm. morphine and 0.3 mgm. scopolamine. With sufficient anesthesia of the loose subpleural areolar tissue the operation can usually be done without pain to the patient. The hardened mass of paraffin sets up a foreign body reaction in the tissues which soon encapsulates it, but occasionally troublesome effusions occur which require aspiration. If infected, the area may be sterilized by injections of *electrargol*. The patient should be kept in bed at least three weeks after the operation so that the mass may become firmly fixed by adhesions. There is a rapid loss of symptoms and in one of the reported cases the patient was able to return to work after a few months. Full results cannot be expected until after about a year. Extrapleural tamponing is indicated in cases in which there is a natural tendency to fibrosis but in which the reaction has become stationary. A superficial cavity is a contraindication, as it may rupture into the pleura, but in the case of a deep cavity the operation may of itself cause healing, or by continued pressure it may close the blood vessels and make possible a subsequent thoracotomy. Tamponing is indicated when the condition of the patient does not permit of a more radical operation. This is especially true of cases with abdominal complications; and Baer cites a case in which an apical cavity was thus compressed, so as to allow the patient to overcome a severe intestinal tuberculosis. Severe hemorrhage cases in which the location of the bleeding vessel is definitely known may be successfully treated by this method. In performing the operation during the course of severe pulmonary hemorrhages the danger of aspiration pneumonia is imminent, but frequently it will prove successful.—*Die extrapleurale Plombierung bei Lungentuberkulose, G. Baer, Münch. med. Wchnschr., December 9, 1921, lxviii, 1582.*

Social Aspect of Surgical Treatment of Pulmonary Tuberculosis.—It is possible by operation to heal unilateral fibrocavernous cases. This cure brings back to the patient a renewed desire and zest to live and renders him able to work. This benefit is obtained not only in people with means but also and above all in people of the middle and poorer classes. Hence it is imperative that operative measures be employed freely whenever the indications demand them.—*Die Bedeutung der chirurgischen Behandlung der Lungentuberkulose für die sociale Fürsorge, Sauerbruch, Zeitschr. f. Tuberk., October, 1921, xxxiv, 687.*

New Portable Artificial Pneumothorax Apparatus.—The portable pneumothorax apparatus consists of two narrow 700 cc. graduated cylinders, communicating at their lower ends with rubber tubing. One cylinder is fixed while the other can be elevated, the former being mounted on a narrow board which slides in a slot. The cylinders contain altogether 700 cc. of colored bichloride of mercury solution. The fixed cylinder communicates with a water manometer and also with the pneumothorax needle via a two-way stopcock. A glass tube containing sterile cotton is fixed on the board, serving as support for the fixed cylinder and the manometer. The entire instrument is mounted in compact fashion in a portable case. The advantages of this outfit are mainly its simplicity of construction, operation and compactness. A new pneumothorax needle is also described.—*Zur Technik des künstlichen Pneumothorax, E. Hartmann, Zeitschr. f. Tuberk., December, 1921, xxxv, 269.*

New Portable Artificial Pneumothorax Apparatus.—A simple transportable pneumothorax apparatus is described which has been used for two years and can supply two gases, carbon dioxide (or oxygen) and air (or nitrogen). The advantages of the apparatus are its simple construction and ease of handling without assistance. It permits the introduction or removal of gases with a pressure from 0 to 30 cm. water and permits the use of carbon dioxide and air consecutively, the carbon dioxide being generated in the apparatus from a sodium salt tablet. The various chambers are connected by a four way cock. The apparatus in a case with cover consists of a pair of flasks, a four-way cock, a special dropping funnel for air inlet and a water manometer. The flasks are cylindrical in form, of 500 cc. capacity, and are closed with glass stoppers.—*Ein transportabler Pneumothoraxapparat zur Anwendung von Kohlensäure und Luft, G. Grass, Beitr. z. Klin. d. Tuberk., May 2, 1921, xlvii, 337.*

New Manometer for Measuring Intrapleural Pressure in Artificial Pneumothorax.—The intrapleural pressure value obtained by means of the apparatus of Kuss is in practice the arithmetical mean of the minimum and maximum pressures recorded during a respiratory movement. This value can be exact only in proportion to the correctness of the pleural pressure figures from which it is derived, that is to say, if the oscillations of the manometer register the true intrapleural pressures at the beginning and end of a respiration their mean will give the true mean intrapleural pressure, but if the oscillations register falsely their mean value gives a false intrapleural pressure. In clinical practice the arithmetical mean, deduced from the maximal and minimal values of a respiratory oscillation measured by the apparatus of Kuss, does not always agree with the mean intrapleural pressure verified by another method; hence these oscillatory maxima and minima must be regarded as subject to error. These errors are dealt with in a recent paper by Kuss reviewed in this journal. It is possible to avoid them; but the likelihood of their occurrence and the difficulty of reading the oscillatory extremes render it important to measure intrapleural pressure by some other method. This can be done very successfully by employing a manometer containing oil, which, thanks to its viscosity, undergoes only negligible oscillations during a single respiration, and thus allows the intrapleural pressure to be observed during several successive respirations. A mixture of thirty parts of castor oil to three of chloroform gives a fluid with a density equal to water, which, colored by a crystal of iodine, possesses the requisite qualities and is little modified by changes of temperature. A U tube containing the oil is combined with the ordinary water manometer, both tubes being set up on the same stand, and crossing each other at the bottom of the U so that the two closed arms run parallel on one side of a central scale and the two open arms on the other side of the scale. Both can thus easily be read at one time. The arms are of the same length, but the bore of the oil manometer should be a little the larger. The liquid in both tubes should stand at the same level. The two tubes are connected as follows: The water manometer, which in the new arrangement may be distinguished as the oscillometer, has, on the arm communicating with the pleural cavity, a branch extending at right angles which leads to the gas flask. Near its end the tube has a glass stopcock and between the cock and the U tube a T branches off to give attachment to the rubber tube going to the lungs. Beyond the branch leading to the lungs and the gas flask the arm of the manometer tube is fitted with a second glass stopcock and this end is joined by rubber tubing to the corresponding end of the U tube containing oil, the manometer proper. In practising an insufflation both tubes are put into communication. As soon as the needle perforates the pleura the column of water will rise suddenly in the pleural branch and begin to oscillate. At the same time the column of oil will rise, but more slowly, and after a short time will come to rest, or at least will execute very small oscillations. The pressure can then be read off directly, needing neither measurement nor calculation. During the aspiration of gas the change of level proceeds slowly and at the end the mean pressure is given without any readjustments of the apparatus. The first and succeeding insufflations are made in the same way. But when one is dealing with positive pressures, or for any reason gas is injected rapidly, it is well to interrupt by means of the stopcock the communication between the oil and water manometer as long as the gas is passing into the pleural cavity, and not to restore the connection until the gas and the pleura are disconnected. This precaution is taken to avoid too great a movement of the oil column, since the oil, owing to its great viscosity, moves slowly, and should one wish to measure the mean pressure again some moments later there would be the inconvenience of waiting till the oil adhering to the tube had all flowed back. This very simple device enables one to keep in view during the whole insufflation an oscillometer which indicates whether the end of the needle or the trocar is actually in the pleural cavity, and the rhythm and amplitude of the patient's respirations, and, also, a manometer registering a true pleural pressure which can be read on a fixed scale without requiring either measurement or calculation. Owing to its small capacity, no modification of pleural pressure is caused by the manometer.—*Étude critique des méthodes de mensuration de la pression intrapleurale au cours du pneumothorax artificiel. Avantages de l'emploi d'un manomètre à huile, J. Bertier, Rev. d. l. Tuberc., December, 1921, ii, 431.*

Gradual Artificial Pneumothorax.—The greatest disadvantage of artificial pneumothorax is its use in only one side. Since Gwerder has made use of small amounts of gas, which ideally localize over the lesions, he has been successful with double-sided, severe processes and sees a real indication for its use. A case is re-

ported with a severe left-sided process and right upper lobe involvement in which two years' treatment resulted in improvement which persisted for a year after discontinuing treatment.—*Beitrag zum Entspannungspneumothorax, Gwerder, Beitr. z. Klin. d. Tuberk., April 11, 1921, xlvii, 231.*

After-Effects of Artificial Pneumothorax.—Of 310 patients who had had artificial pneumothorax, 71 per cent kept up the treatment. Of this number 33.9 per cent were enabled to perform ordinary or light work; 3.2 per cent were unable to work; 59.3 per cent died of tuberculosis; and 28 per cent from other causes. Of the 29 per cent, who for some reason or other did not continue the pneumothorax, 10.9 per cent were able to work; 1.1 per cent were unable to work; 85.9 per cent died of tuberculosis; and 2.2 per cent of other causes. The mortality in the above statistics is higher by about 7 per cent because a number of hopeless cases are included. The writer maintains the collapse, if this has been complete, for four or five years. If after this time the patient continues able to work, and he desires it, the treatment is discontinued. Less hesitancy is now felt, since the good effects of thoracoplasty have been demonstrated, to discontinue pneumothorax. Of 185 patients receiving pneumothorax, 66 per cent developed pleural exudate, of whom 38.2 were able to work as compared to 42.2 per cent who developed no exudate; and 53.7 of the former died as compared to 50 per cent of the latter.—*Dauererfolge der Pneumothoraxbehandlung bei Lungentuberkulose, C. Saugman, Zeitschr. f. Tuberk., July, 1921, xxxiv, 425.*

Physical and Chemical Bases of Light Treatment.—The action of light despite innumberable experiments, is only partially understood. Its most important effect appears to be due to its ability to increase metabolism considerably; therefore, the future of light treatment seems to lie in general rather than local exposures. The better action of high ultraviolet rays is not completely established. We can employ rays of different wave-lengths, but good results depend chiefly upon the intensity of the rays and the absorption of these by the body.—*Die physikalischen und chemischen Grundlagen der Lichtbehandlung, L. Pincusen, Deutsch. med. Wchnschr., 1921, no. 11, 422.*

Heliotherapy.—A system of treatment with mirrors to intensify sunlight is described, as carried out in a hospital at Algiers. From one to fifty of these mirrors, which can be separately adjusted for reflection, throw the rays on the area to be treated, thus increasing the intensity fifty per cent. Graduated exposures can be carried out by means of screens and veils. Small flat mirrors are preferred. Dosage is decided by the effects on sensitized paper and with three thermometers, one of which is black, one silver to reflect the rays, and the third sheltered from the rays. The optimum dose is at 38° to 40°C. The results are generally good and free from harm.—*Heliotherapie, M. de Laroquette, Arch. de. Med. et de Pharm. Militaires, May, 1921, lxxiv, 451.*

Sunlight Treatment of Rickets.—Infants were placed in sunlight for one-half hour to several hours, the period varying according to the intensity of the sun, the clemency of the weather and the sensitiveness of the baby. Exposures were sufficient when made merely to the arms and legs, but when temperature permitted the trunk was also exposed. Sunlight brought about not only a clinical cure of the characteristic illness, but also an increase in the inorganic phosphates of the blood, similar to that noted when the cure is accomplished by means of codliver oil. This establishes a chemical basis for application of sunlight and offers a definite evidence of metabolic change in the animal body brought about by solar rays.—*The Cure of Infantile Rickets by Sunlight, A. Hess and M. Gutman, Jour, Amer. Med. Assoc., 1922, lxxviii, 29.*

Prevention of Rickets in Rats by Sunlight.—A diet high in calcium, low in phosphates and low in fat-soluble A vitamines was employed, which in diffuse light gave rise to a disease identical with rickets as seen in human beings. Eighteen cases were placed on the diet. Twelve were exposed to sunlight for a total of 242 hours, or a period of 62 days. Six were kept under the conditions of ordinary room light as control animals. The control rats killed at the end of sixty days all showed rickets. The rats exposed to sunlight remained without exception entirely free from rickets. This was verified by histological examination. The beneficial effects were not limited to the skeleton, as general improvement also took place. However, the animals remained undersized and the bones, although calcified, remained thin. Though sunlight did not alter the defects from the diet, it permitted the animals to thrive to a limited extent in the presence of light. Sunlight in some way raises the efficiency of the body cells. The effects of sunlight and codliver oil on the

growth, in calcification of the skeleton and in the animal as a whole, seem to be similar, if not identical.—*The Prevention of the Development of Rickets in Rats by Sunlight, G. Powers and E. Park, Jour. Amer. Med, Assoc., 1922, lxxviii, 159.*

Treatment of Pulmonary Tuberculosis by Sunlight and Artificial light.—In order to prevent pigmentation of the skin it is necessary to change the light-exposed area frequently. Chest, back, arms and legs can be exposed successively. The area chosen for treatment is of no consequence (as it is in surgical tuberculosis), since a symptomatic effect is desired, unless we desire to apply the rays for alleviation of pain. The patient is exposed until, as dictated by previous experience, hyperemia occurs. This end point is more easily ascertained with artificial light, owing to its constancy of illumination, than with sunlight. In the latter case it is advisable to employ an instrument to gauge the intensity of the rays. Owing to the possibility of provoking a focal reaction it is necessary to expose the patient to light only every three or four days, so that if a reaction should occur the treatment can be terminated. The purpose of light therapy in pulmonary tuberculosis is partly to evoke a focal reaction, which consists of hyperemia about the focus; hence the best area to expose to light is the chest. As in the case of tuberculin therapy, febrile cases are not suitable for light therapy; nor are rapidly progressive cases. Hemoptysis is *per se* no contraindication.—*Methodik der Behandlung der Lungentuberkulose mit Sonnenlicht und künstlichen Licht, J. Sorgo, Wien. med. Wchnschr., December 10, 1921, lxxi, 2206.*

Metabolism of Children Undergoing Open Air and Sunlight Treatment.—Studies were made on children with surgical tuberculosis, who had been in splints in bed with most of their bodies exposed. Three months' treatment, including graduated exposure to the open air and sun, increased metabolism twenty per cent above that noted in patients kept in well ventilated cubicles. Children treated for many months showed high metabolism when out of doors. Those who pigmented well in the sun gave the same figures as those who did not pigment well, although the former gained more weight. On the average, metabolism increased forty per cent above the standard for the same weight of children placed in the closed calorimeter. The rise in metabolism caused by sunlight exposures is insignificant compared with that caused by exposures to the open air, yet the value of the former as an aid toward arresting the disease is not disputed. Children kept in well ventilated cubicles had a twenty per cent higher metabolism than the base standards of those in enclosed calorimeters. Here the open air conditions were mainly responsible. Balneotherapy also increased metabolism rather remarkably, as well as the bodily tone and general condition of the children.—*Metabolism of Children Undergoing Open-air Treatment, Heliotherapy and Balneotherapy, L. Hill and J. Campbell, Brit. Med. J., 1922, i, 301.*

Radiotherapy of Tuberculosis.—Light, heat and chemical rays are discussed from physical, chemical and biological standpoints. Sunlight, radium and X-rays act by arousing the natural defensive forces of the body. It is not a specific mode of treatment. It profits by all effectual aids of any kind, including that of tuberculin.—*Röntgentherapie der Tuberkulose, O. de la Camp, Med. Klinik, November, 1921, xviii, 1435.*

X-Ray Treatment of Pulmonary Tuberculosis.—In conjunction with artificial sunlight X-ray treatment can be of great aid in the therapy of tuberculosis. The basic principles are proper dosage, individualizing of cases, and accurate division of the fields to be rayed. Unsuitable cases are those with fever, showing tendency to progression and the advanced third-stage cases, even if stationary. Those that were especially suited for treatment were the stationary, nodular and indurative types of the first and second stages.—*Zur Frage der Röntgentherapie bei Lungen-Tuberkulose, R. Windrath, Med. Klinik, 1921, no. 26, 775.*

Treatment of Surgical Tuberculosis with Alpine Kromayer Lamp.—In the Eiselberg clinic lymphatic tuberculosis especially diminished, but there was an increase of that of bones of joints. Quartz light treatment was particularly beneficial in heating superficial tuberculosis. After frequent raying with the Alpine lamp, results were not satisfactory, so that in addition the Kromayer lamp was employed. In disease of the bones and joints the results were not so favorable as in lymphatic disease, although even here 42 to 44 per cent of the cases were healed. In tuberculosis of the hip, spine and foot, hospital care is absolutely essential.—*Die chirurgische Tuberkulose in der Nachkriegszeit und ihre Behandlung, mit der Baschen Höhensonne und der Kromayerschen Quarzlampe, L. Schönbauer, Mitt. a. d. Grenzgeb. d. Med. u. Chir., 1921, xxxiii, 405.*

Heliotherapy and Tuberculous Laryngitis.—Although heliotherapy by itself may be curative in occasional incipient, benign forms of tuberculous laryngitis, the most reliable results are obtained by combining it with various drastic measures, such as the galvanocautery and curettage.—*Die Sonnenbehandlung bei Kehlkopftuberkulose, E. Glas, Wien. med. Wchnschr., December 10, 1921, lxxi, 2156.*

Combined Tuberculin and X-Ray Treatment.—O.T. was administered intracutaneously in initial doses of a dilution of 1:10,000, which was increased to 1:50. The patient was exposed likewise to the X-ray (Holzknecht 5 through 5 mm. aluminum filter) at 1½–4 weeks' intervals. In about 80 per cent of the cases this combined treatment proved beneficial; in some cases the X-ray had to be abandoned owing to exacerbation of symptoms. In the latter type of case altitude treatment likewise was contraindicated. Only cases of the proliferative-indurative type with good heart function are benefited by the open air treatment at higher altitudes.—*Die Intrakutanmethode im Rahmen allgemeiner Tuberkulose-Therapie, A. Petö, Wien, med. Wchnschr. December 10, 1921, lxxi, 2180.*

Milk Injections or Injections of Old Tuberculin.—In 1920 Schmidt of Prague employed milk parenterally in a variety of conditions, especially in the arthridites, and also in pulmonary tuberculosis, with apparent success, leading him to state that his milk therapy brings about as good results in tuberculosis as tuberculin. The beneficial results accomplished were attributed by him to the protein contained in the milk. These results seemed to endanger the theory of the specific action of tuberculin. In view of this opinion, 54 patients were injected intragluteally with 0.5 cc. of sterilized milk. This dosage was gradually increased to 1, 2, 3, 5, 6, 8 and 10 cc. No reactions comparable to tuberculin were produced. Only when 3 cc. or more were injected did pain occur at the site of injection after five hours. Its value cannot be compared to tuberculin.—*Kann die Milch dos Alt-tuberculin ersetzen, W. von Friedrich, Zeitschr. f. Tuberk., November, 1921, xxxv, 200.*

Tebecin, a New Form of Tuberculin.—Tebecin consists of a suspension of tubercle bacilli that have been grown on glycerin-agar and killed by heating. In order to diminish the virulence of the bacillus the originator (Dostal) grows it on a medium containing a glycoside (saponin), in order to saponify the lipoids of the bacillus and thus reduce its acid-fastness, upon which quality the virulence and resistance of the tubercle bacillus seem to depend. Tebecin can be considered a mixture of partial antigens, such as those of Much's partigens *F* and *R* with the water soluble component. Tebecin was used in 77 cases with good results in all, even if with only slight improvement in advanced cases. Care must be taken not to begin with too large a dose in pulmonary tuberculosis. Larger doses are permissible in so called surgical tuberculosis. Even when dosage is properly controlled, patients will complain, up to the tenth injection, of sleeplessness and headache on the day of injection. The usual initial dose is 0.1 cc. and is increased gradually up to 1 cc. The improvement in these patients manifested itself in increase of weight, diminution of râles and general symptomatic improvement. Detailed histories are given of 77 cases.—*Über Tuberkulinbehandlung und das Tebecin (Dr. Dostal), O. Löwinger, Wien. med. Wchnschr., July 16, 23 and 30, and August 6, 1921, lxxi, 1265, 1333, 1372, 1418.*

Nöhring's B IV in Treatment of Pulmonary Tuberculosis.—Nöhring's preparation, introduced under the name *B IV*, presents a substance obtained from the bile of healthy cattle which is soluble in an acid medium and precipitates in neutral solutions. Chemical analysis of this proprietary remedy shows it to be a hitherto unknown substance of bile. It is first neutralized with a 0.25 per cent solution of sodium hydroxide. The precipitate is then shaken with the supernatant liquid and subcutaneously injected. At the site of injection a burning sensation arises which disappears after a few minutes, and is followed by redness, not specific. In afebrile and subfebrile cases the temperature seldom rose above 37°. In febrile cases two types of reaction occurred: either the temperature dropped the same on the following day and then rose again until the maximum was attained after five to seven days, after which it again fell by lysis to a point lower than that existing before the injection; or the temperature usually rose immediately after injection without an initial drop and tended to remain up or drop very slowly. Soon after injection there occurred a disseminated increase in râles throughout the lung foci, an increase in expectoration, and about a week later the patient's condition was apparently better than before the injection. No particularly rapid disappearance of tubercle bacilli from the sputum, as is alleged to occur by Nöhring, took place.

They disappeared only as the general condition of the patient improved.—*Über die Behandlung der Lungentuberkulose mit "Nöhring B IV", R. Reitler, Wien. Med. Wchnschr., October 22, 1921, lxxi. 1842.*

Principles of Partial Antigen Therapy.—The practical and theoretical principles of partigen therapy are discussed. Cases of pulmonary tuberculosis at the Polyclinic at Jena, treated with partial antigens, were observed for three years, and 7 cases are given in detail. In judging the cases emphasis was placed upon a definite determination of tuberculosis, without considering the pathological anatomic type of the disease. Intracutaneous tests were made with partigens and coincidently with O.T., 1:10,000 and 1:100,000. The maximum reaction occurred with partigens on the seventh day, with O.T. as early as the second day. The intracutaneous reaction, which does not occur according to the laws laid down, is of no value prognostically. The artificial unlocking of the tubercle bacilli with lactic acid is so basically different from the biological conditions occurring in the living body, that the presence of specific antigens in the partigens does not seem likely. The action of partigens lies more in the realm of a protein therapy. Specificity also does not play such a decisive part. Tuberculins of all types and copper and gold solutions are all in the same class. The partigen rules permit no certain insight into the nature of immunity, but the majority of the cases of the first and second stages were favorably influenced by the treatment. The partigens occupy first place, in comparison to all other curative agents.—*Die Partialantigene nach Deycke-Much im Rahmen des Tuberculoseproblems, L. Preiss, Beitr. z. Klin. d. Tuberk., April 11, 1921, xlvii, 172.*

Nonspecific Versus Specific Treatment of Tuberculosis.—Too little is known about the nonspecific therapy of tuberculosis to compare it with specific treatment. Blood examinations should be made regularly during heliotherapy, not so much to ascertain the percentages of the various types of cells as morphological changes occurring in red and white cells and platelets. In a case of tuberculous meningitis daily tuberculin inunctions (Petruschky's) were combined with injections of several drops of electroferrol (a protein body) and intracutaneous injections at two to three day intervals of 0.5 gm. caseosan. After eight days the patient was able to sit up and in due time recovered completely.—*Vereinigung spezifischer und unspezifischer Heilwirkung zur gegenseitigen Ergänzung bei Tuberkulose, A. Mayer, Zeitschr. f. Tuberk., January, 1922, xxxv, 346*

Treatment of Tuberculosis with Increasing Doses of Living Turtle Bacilli.—Turtle bacilli were given in initial doses of 0.01 mgm. and this amount doubled at intervals of eight days up to a final dose of 0.1 mgm. Repetition of treatment and dosage depended upon the local reaction, the general condition, and the pulmonary findings. Eighty cases of all stages and varieties were treated, except highly febrile, rapidly proliferating forms. One-third of the patients remained uninfluenced; one-third showed considerable improvement in general condition without changes in the pulmonary findings, while in the remainder râles disappeared and infiltrations diminished. Only definite cases of tuberculosis are suitable for this treatment; it is not recommended as a prophylactic measure in cases suspected of phthisiophobia or in nurslings. The treatment induces a focal or general reaction less frequently and requires fewer injections than Koch's emulsion or Deycke-Much's antigens.—*Die Behandlung der Tuberkulose mit lebender avirulenter Vakzine in Steigender Dosis, F. Klopstock, Deutsch. med. Wchnschr., February 24, 1921, xlvii, 211.*

Activity of Commercial Samples of Friedmann's Remedy.—The ampules as bought from the druggist were found to be greatly deficient in bacterial content and some were found to contain other contaminating microörganisms.—*Über die Beschaffenheit der aus Schildkrötenbazillen hergestellten Tuberkulosemittel, B. Heymann and M. Koike, Zeitschr. f. Tuberk., November, 1921, xxxv, 161.*

Friedmann's Remedy Advocated.—Although Friedmann's remedy has not received universal endorsement, it has not, however, been rejected as entirely worthless. In fact it seems to offer a simple and cheap method of protective inoculation in nurslings of tuberculous parentage.—*Zur Bekämpfung der Tuberkulose, W. Kruse, Zeitschr. f. Tuberc., June, 1921, xxxiv, 381.*

Delayed Reaction after Friedmann's Remedy.—A case is reported in which a patient receiving an intragluteal injection of Friedmann's remedy developed a painful tumor at the site of injection which subsided under local treatment but reappeared after nearly a year as a painful abscess, requiring incision and evacuation. The contents of the abscess showed caseous tubercles. The question arises whether tubercle bacilli of

cold-blooded animals may not possibly be animal passage become virulent for man. The case in question leads us to think that such may not be impossible.—*Spätreaktion nach Injektion des Friedmannschen Mittels, E. Bect, Zeitschr. f. Tuberc., December, 1921, xxxv, 264.*

Reasons for Failures of Friedmann's Remedy.—A cure occurs in cases without liquefaction through absorption of the cellular tubercles in those with beginning caseation at the time of treatment. A cure is only possible by demarcation, sloughing, perforation and fistula formation. Mistakes following the administration of the remedy are; 1. Treatment of too far advanced cases such as cavernous phthisis with fever, disseminated varieties, caseous pneumonia, amyloidosis, grave pulmonary lesions associated with laryngeal or surgical tuberculosis, meningitis and extensive bone destruction. 2. Treatment of healthy adults or children in whom the natural power of defense is sufficient to overcome the invading bacilli. By saturation with superfluous antigen natural resistance is broken down. The Friedmann inoculation is indicated and immediately required only in slight continuous fever, loss of weight, râles, night sweats, in cases with a limp, unilateral painful swelling of joints, permanent pain in the abdomen, diarrhoea, swelling of the abdomen, etc. 3. Incorrect choice of dose. 4. Administration of tuberculin following Friedmann treatment or inoculation against smallpox, typhoid fever or cholera, drug treatment or alpine lamp, pneumothorax therapy. 5. Failure to apply a second injection at the right time in suitable cases. The number of cured cases is very great, where incipient patients are submitted to the Friedmann treatment and the process of cure is not disturbed by any other therapeutic interference or by supervening infectious disease, or operation.—*Grunde für hin und wieder beobachtetes scheinbares Ausbleiben von Heilefolgen des Friedmann'schen Mittels, F. F. Friedmann, Deutsch. med. Wchnschr., May 12, 1921, xlvii, 533.*

Treatment of Lupus Vulgaris with Mercuric Nitrate.—Lupus vulgaris is rather rare in this country but is more common on the continent. The Finsen light gives the most perfect cosmetic results but requires a long time. Tuberculin as an adjunct to the therapy of tuberculosis of the skin has not come up to expectations. Roentgen ray therapy gives excellent results in the hypertrophic and ulcerated types, but the common atrophic type is exceedingly resistant, especially in the older eruptions with deepseated nodules. Prolonged use of the roentgen ray favors the development of epithelioma in the lupus scar. Radium is favored by some but it has the same potential dangers as the X-ray, namely, subsequent atrophy and telangiectasia. Of the caustics, Adamson, of England, got superior results with the solution of acid nitrate of mercury (Solution of Mercuric Nitrate, N. F., *liquor hydrargyri nitratis*). Adamson's findings have been corroborated in six cases of long standing lupus, all of which had received preliminary roentgen ray treatment without definite improvement. By means of a cotton applicator the solution of mercuric nitrate is painted on the nodules for one to two minutes with firm pressure and allowed to dry. The pain of the application is not severe and the effect is to change the soft, yellowish nodules to a white opaque appearance. The acid should not be neutralized and no dressing is necessary. A crust forms which falls off after a week or ten days, leaving the area either healed or with a superficial ulcer which heals rapidly. The remaining scars are smooth and healthy looking. It is best not to use the acid on too large an area at one sitting and if isolated nodules remain they should be treated again. According to Adamson the method can also be used in ulcerated lupus and in mucous membrane lesions under local anesthesia. It is of particular value in the atrophic type with recurring nodules. No unfavorable results occurred if a month was allowed to elapse between the last roentgen ray treatment and the application of the solution. *Conclusions*: 1. Solution of mercuric nitrate is a simple and effective agent in the treatment of lupus vulgaris. 2. The action of the acid is enhanced by a preliminary course of roentgen ray therapy.—*The Treatment of Lupus Vulgaris with Solution of Mercuric Nitrate, E. P. Zeisler, J. Am. M. Ass., April 8, 1922, lxxviii, 1045.*

Intravenous Calcium Treatment of Pulmonary Tuberculosis.—Two cases were benefited by the intravenous injection of 5 cc. of 10 per cent calcium chloride solution at eight hour intervals, until hemorrhage ceased, and twice daily for twenty days with fourteen days intermission, in order to reduce fever. A number of cases experienced reduction of temperature and expectoration, and disappearance of night sweats and dyspnea.—*Intravenöse Kalziumtherapie bei Lungentuberkulose, H. Maendl, Zeitschr. f. Tuberk., November, 1921, xxxv, 184.*

Treatment of Bone and Joint Tuberculosis.—Only the painful joint is put at rest in a plaster cast until a time when no pain occurs upon movement. Rest is sup-

plemented with X-ray, Bier's hyperemia and heliotherapy. Forced extension is usually not a harmless therapy because subcutaneous hemorrhages in and about the joint may occur and cause a stirring up of foci which may delay the favorable progess of the disease. The sun treatment cannot, as is sometimes thought, prevent contractures.—*Dei Krankheitserscheinungen und die Behandlungserfolge der Knochen- u. Gelenktuberkulose, H. Spitzy, Wien. med. Wchnschr., December 17, 1921, 2231.*

Treatment of Advanced Tuberculosis of Urinary Tract.—Of a total of 128 cases of tuberculosis of the urinary tract 4 were found in which, owing to a sclerotic contracted bladder, no cystoscopic examinations could be made to determine which kidney, or whether both kidneys were tuberculous. In order to ascertain this, both kidneys were exposed after functional kidney tests revealed the presence of adequate functional kidney tissue. It is a well known fact that tuberculosis of the bladder is usually, if not always, secondary to that of the upper urinary tract and only when the latter is remedied do we obtain improvement of the bladder tuberculosis. It was found in these 4 cases that after the removal of the tuberculous kidney marked improvement occurred in the bladder condition, with a lessening and disappearance of pain and decrease in frequency of urination.—*Zur Therapie weit vortgeschrittener Fälle von Tuberkulose des Harntraktes, R. Lichtenstern, Wien. med. Wchnschr., October 1, 1921, lxxi, 1702.*

Hemoptysis and Its Treatment.—*III. Therapeutic Principles and Their Application*: A lowering of blood pressure seems desirable in the treatment of hemoptysis, but it must be remembered that the right ventricle cannot escape delivering to the lungs the amount of blood that is received from the systemic circulation, except at the risk of setting up a passive congestion. It is more rational, therefore, to lower in every possible way the activity of the systemic circulation, expecting that this would result in a decreased blood flow through the lungs. Those things must be avoided which throw a large volume of blood into active circulation, such as muscular exercise, drugs which flush the skin, as alcohol, and the kidneys, as tea and coffee, pressor drugs which increase circulation through areas of low vasomotor control (as the brain), vasodilators which release peripheral pressure and dilate the heart, large drinks which may increase the fluids in circulation. Among the measures helping to diminish the blood in circulation is included binding of the limbs and cupping of the abdomen, rest and quiet, avoidance of speech and circulatory stimulants. Cardiac depressants, particularly depressant expectorants, pushed to full doses, lessen the active circulation. To increase coagulability of the blood, thrombokinase may be got into the blood through the medium of tissue fluids, by increasing the tonicity of the blood (salt intravenously, etc.) or by binding the limbs until edema ensues and then releasing them. Administration of calcium salts may supply a deficiency in some cases. It is not likely that much can be accomplished by trying to force a constriction of a bleeding vessel, as this vessel is diseased and surrounded by diseased tissue. If the site of bleeding can be determined pneumothorax may be indicated. The sandbag and strapping may lead to retention of clots. The icebag exerts a vasomotor effect on the pulmonary area but it may contribute to shock. Clearance of blood from the bronchi is important, and stimulants, expectorants or even emetics (apomorphine) may have to be given where the danger of suffocation arises. The scheme of treatment in actual practice is outlined as follows: The patient must be put to bed in a quiet, airy room and all, save the nurse or one member of the family, are excluded. He should be kept propped up with pillows in a semi-upright position so that he can easily clear his bronchi of blood and should avoid speaking. The patient should be reassured by the doctor. It may be desirable to give 30 to 40 grains of sodium bromide at once to increase clotting power. Useless coughing should be restrained but the bronchi must be cleared of blood as it accumulates. Narcotics should not be given as a routine, should be avoided in large bleedings, and only given for excessive and irritable cough when this cannot be controlled by other means. Under these conditions heroin, codein, Dover's powder, bromide or morphine may be given in moderate doses by mouth. An icebag placed over the heart (with a layer of lint between) will reduce cardiac excitement, and another one over the bleeding point seems indicated. Only stethoscopic examination of the front of the chest is permissible. If bleeding continues, an injection of pituitrin (0.5 to 1cc.) may be tried to lower temporarily the pulmonary pressure, or an intravenous injection of 5 cc. of a 10 per cent sodium chloride solution may be given. Otherwise, a teaspoonful of salt in a half-tumbler of water may be given by mouth with the bromide recommended. The effect of intravenous salt should be rapid and should last for about one hour, when it may have to be repeated or, if it fails, a 15 per cent solution may be tried. If bleeding is severe, a rubber or elastic band or even a handkerchief should be bound about the mid-

dle of each thigh over a piece of lint or flannel; it must compress the veins but not the arteries. It may be left on one-half or three-quarters of an hour up to two hours at the most. It is then released very slowly so as not to start fresh hemorrhage; one or both arms may be bound at the same time to help counteract this. Sucking of ice and application of hot water bottles should not be employed. Hot drinks are also to be avoided. Calcium is of doubtful value, but one or two grains of the choride or lactate in 20 minims of water may be put into the gluteal muscle and repeated three or four days later. Intravenous injection is best avoided. Gelatine and serum may be tried in certain cases. Food should be light and unstimulating at the outset, but this should be increased as soon as the hemorrhage has stopped until ordinary feeding is reached by the third day after. Fluids should be reduced as far as possible. The bowels must be kept open. Two or three days after all bleeding has stopped the patient may sit out in a chair and soon after walk about the room. The anemia may then be treated with iron, best the organic preparations at first, and perhaps arsenic in small doses. In robust, gouty or plethoric subjects disposed to frequent bleeding, the diet should be reduced, particularly meat, alcohol avoided, exercise increased, and regular purgations employed. Since in practice the origin of hemoptysis is generally uncertain, it seems better to presume that serious bleedings are of rupture origin and to treat them accordingly.—*Hemoptysis and Its Treatment (concluded)*, *C. Riviere, Tubercle, April, 1922, iii, 299.*

Criticisms of Antituberculosis Measures.—Selter's suggestion regarding the protection of nurslings against infection are considered impracticable. Removal of the mother would result in breaking up the family and that of the father in deterioration of the financial condition with subsequent underfeeding. The isolation of the children in special sanatoriums would require much money and would not be advisable for medical and pedagogical reasons. On account of the rare diagonsis of open cases at the very beginning the desired result would not even be attained by the latter measure.—*Die tuberkulöse Durchseuchung der städtischen Bevölkerung und ihre Bedeutung für die Tuberkulosebekämpfung, W. Salomon, Deutsch. med. Wchnschr., April 21, 1921, xlvii, 447.*

Recurrent Bilateral Pneumothorax.—The patient, a male, aged 27 years, was usually in robust health except for recurrent attacks of pneumothorax. He had had a dozen of these attacks in a period of ten years, affecting the right and later the left side. During attacks he had pain but usually was not dyspneic. Lung collapse was proved on two occasions by X-ray; once on the right and once on the left. On one occasion he had cough and expectoration with signs of infiltration of the right apex; these signs and symptoms cleared up within two months. The left pneumothorax caused pain closely resembling angina and neuritis in the left shoulder. When on the right the pain at one time was thought to be due to gall bladder disease.—*A Case of Recurrent Bilateral Pneumothorax, J. B. Hawes, 2nd, Boston M. & S. J., April 20, 1922, clxxxvi, 528.*

Prognosis of Pulmonary Tuberculosis with Cavity.—The author calls attention to the fact that nearly forty years ago he pointed out that small cavities often heal and may close entirely, and larger ones can become cleansed of infectious material and lined with young granulation tissue and, if they do not close, their size may decrease considerably. The life of a patient with cavity may often be prolonged for decades and, although cavitation *per se* is an unfavorable prognostic sign, its appearance does not by any means necessarily mean an early demise. If these statements could be made so long ago, they certainly will hold nowadays when our methods of treating tuberculosis have so greatly improved.—*Einige Bemerkungen zur Frage der Heilbarkeit tuberkulöser Lungenkavernen, J. Orth, Zeitschr. f. Tuberk., December, 1921, xxxv, 251.*

Tuberculosis and the Home.—Tuberculosis should be made a reportable disease and the patient be segregated from the rest of the family in some cases. Where this is not feasible the patient should be removed to a sanatorium.—*Tuberkulose und Wohnung, Abel, Zeitschr. f. Tuberk., October, 1921, xxxiv, 575.*

Heart Valve Defects in Tuberculosis.—Heart murmurs are rare in pulmonary tuberculosis because phthisis is but seldom combined with a mitral defect. In the absence of passive congestion of the lungs, mitral as well as aortic deficiencies may occur in pulmonary tuberculosis, although cases have been observed in which the latter developed even in the presence of a congested lung. No perceptible improvement occurs in pulmonary tuberculosis when a mitral lesion develops after its onset.—*Herzklappenfehler und Lungentuberkulose, F. Kellner, Zeitschr. f. Tuberk., August, 1921, xxxiv, 33.*